THE

UNITED SERVICE.

JUNE 1880.

THE ITALIAN NAVY.[1]

HISTORY informs us that the Romans received their first lessons in naval architecture from the Carthaginians. They were so much harassed by the continual descents of the fleets of Carthage—then the mistress of the seas—upon the Italian towns that, about the year 263 B.C., they came to the resolution that in sheer self-defense they must prepare to meet their enemies on their own element. It so happened that about this time a Carthaginian "quinquereme" was driven ashore on the coast of Italy. This served as a model for the Romans, who in an incredibly short time put afloat upwards of one hundred "quinqueremes" and twenty "triremes." All these were war-vessels like those of the Greeks and Persians of that time, which were modeled after the galleys of the Phœnicians. When their vessels were equipped, the Romans put to sea, under the command of one of their consuls, C. Duilius. He met the Carthaginian fleet under Hannibal, sunk fifty of their vessels, and three thousand men were slain. Elated by this victory over the strongest naval power of the world, the Romans resolved to "carry the war into Africa," and accordingly prepared a fleet of three hundred and thirty vessels fully manned. Against this formidable armament Carthage sent forth three hundred and fifty ships. The opposing fleets met on the coast of Sicily, and the terrific encounter of the combatants must have afforded a naval spectacle such as the world, perhaps, has never witnessed since. No war of the elements ever equaled this tempest of human passion. Again Rome was triumphant, and ninety-four of the Carthaginian vessels were either captured or sunk.

[1] Extract from a work in preparation for the press to be entitled "The War Ships and Navies of the World," by Chief Engineer J. W. King, U.S.N.

During all the centuries since these first naval victories, the science of ship-building has received constant attention and study in the Italian states; and at the present time we see the land from which the fleets were sent out which humbled the Carthaginian power, and where was seated the empire which dominated the ancient world with its navies as well as its armies, again taking its place in the van of naval progress. That beautiful peninsula, for a thousand years dismembered and plundered and oppressed, yet still, even in that darker period, the land of Columbus and Galileo, of Galvani and Volta, of Michael Angelo and Leonardo da Vinci, still that wonderful land which has extracted glory from every department of human knowledge and adorned every art, is now, as United Italy, slowly but surely rising and again resuming her place among the great nations of the earth. Since the union, only twenty years ago, the great changes and improvement in all branches of administration and every department of industry, especially in mechanical works, force themselves on the observation of one acquainted with Italian ports and cities in years past. The spirit of advancement and progress is seen to particular advantage in the reconstruction of the navy. So far has it been pushed here, that the late minister of marine at Rome, when he took office, is said to have condemned as obsolete and recommended the sale of no less than seven armored ships out of the total of fifteen, some of them quite new, because they did not reach the standard set up for modern fighting vessels. The plan has not been carried out in its entirety, and probably will not be until after the more formidable ships now under construction shall have been completed.

According to a decree issued in July, 1877, the ships of the Italian navy were reclassified and divided into three categories, distinguished as A, men-of-war; B, auxiliary ships of the fleet; C, local ships. The first category is again divided into three classes. In the first of these are placed fourteen men-of-war, fit to take part in every kind of naval warfare. To the second class belong ten ships designed for employment on special missions, such as protecting Italian commerce in time of war, defending the coasts, cruising on distant stations, etc. To the third class of the same category belong twenty gunboats. The second category, that of auxiliary ships of the fleet, is also divided into three classes; the first consists of cavalry-transport vessels of over three thousand tons; the second, of transport-ships of between one thousand and three thousand tons; and the third, of paddle-wheel and screw steamers of between two hundred and one thousand tons. The third category, that of local ships, comprises all vessels of below two hundred tons, and tenders employed at the dock-yards and arsenals.

ARMORED SHIPS.

The annexed list of the armored ships of Italy gives the general dimensions and particulars.

ARMORED SHIPS OF ITALY.

Name of Ship.	Vessel. Class.	Length bet. Perpendiculars.	Extreme Breadth.	Displacement.	Draught Forward.	Draught Aft.	Armament. Number and Description of Guns.	Height of Battery ab. Water.	Thickness of Armor at Water-line.	Machinery. Speed in Knots per Hour.	Indicated Horse-power.	Makers of Engines.	Estimated Cost.	Remarks.
		Ft. In.	*Ft. In.*	*Tons.*	*Ft In*	*Ft In*		*Ft In*	*Ft. In.*					
Italia	Broadside ship	400.6	72.9	13,480	25.6	30.6	4 100-ton Armstrong, 18 smaller guns.	32.8		16*	15,000	Penn & Sons.	$3,834,540	Building at Castellamare.
Lepanto	" "	400.6	72.9	13,480	25.6	30.6	4 100-ton Armstrong, 18 smaller guns.	32.8		16*	15,000	" "	3,834,540	Building at Leghorn.
Duilio	Mastless turret-ship	340.11	64.9	10,401	25.5	26.5	4 100-ton Armstrong.	15.9	21.65	15	7,500	" "	3,500,000	
Dandolo	" "	340.11	64.9	10,401	25.5	26.5	4 100-ton Armstrong.	15.9	21.65	14.5*	7,900	Maudslay, Sons & Field.	3,500,000	Building at Spezia.
Principe Amadeo (*w*)	Line-of-battle cruiser	265	57.10	5,780	24.8	24.8	1 23-ton Armstrong, 6 18-ton "		6				1,238,900	
Palestro (*w*)	" "	265	57.10	5,780	24.8	24.8	1 23-ton Armstrong, 6 18-ton "		6	10			1,238,900	
Roma (*w*)	" "	250	57.5	5,697	23.6	25.6	6 18-ton Armstrong, 2 12-ton "		6			Maudslay, Sons & Field.	1,155,036	
Venezia (*w*)	" "	250	57.5	5,697	23.6	25.6	6 18-ton Armstrong, 2 12-ton "		6			Maudslay, Sons & Field.	1,155,036	
Castelfidardo (*i*)	Ordinary station service.	256.5	50	4,194	19.7	22	9 9-ton Armstrong, 2 12-ton "	6.4	4¾	13	3,000	Forges et Chantiers.	876,800	Single screws; Immersed midship section, 771 sq. feet.
San Martino (*i*)	" " "	256.5	50	4,194	19.7	22	9 9-ton Armstrong, 2 12-ton "	6.4	4¾	13	3,000	Forges et Chantiers.	876,800	
Maria Pia (*i*)	" " "	256.5	50	4,194	19.7	22	9 9-ton Armstrong, 2 12-ton "	6.4	4¾	13	3,000	Forges et Chantiers.	876,800	
Ancona (*i*)	" " "	256.5	50	4,194	19.7	22	9 9-ton Armstrong, 2 12-ton "	6.4	4¾	13	3,000	Forges et Chantiers.	876,800	
Affondatore (*i*)	Coast-defender	290	40	4,070	18.6	20	2 12-ton Armstrong.		5			Millwall Iron Works.	762,400	Two turrets; ram.
Conte Verde (*w*)	Ordinary station service.			3,932			6 12-ton Armstrong, 1 9-ton "		4½					
Varése (*i*)	" " "	198.3	42.4	2,700	13	13	4 9-ton Armstrong, 2 smaller guns.		5½	10		Forges et Chantiers.	415,508	Broadside battery; ram.
Terribile (*i*)	" " "	198.3	45	2,700	17.8	17.8	30 6½-ton guns.		4½	10		Forges et Chantiers.	562,270	
Formidabile (*i*)	" " "	198.3	45	2,700	17.8	17.8	30 6½-ton guns.		4½	10		Forges et Chantiers.	562,270	

(*w*) Wooden hulls. (*i*) Iron hulls. * Estimated.

Of the armored ships included in the above enumeration, there are three of the most important and powerful of all not yet finished, viz., the "Dandolo," which will not probably be completed until the end of 1881 or 1882, and the "Italia" and the "Lepanto," two or three years later.

The armored fleet actually afloat and now in service, besides the "Duilio," but just completed, embraces only four really good sea-going ships, viz., the "Principe Amadeo," the "Palestro," the "Roma," and the "Venezia"; neither has, however, more than six inches of armor, and in general efficiency they may be ranked after the British ships of the "Audacious" class. Their armament is considered powerful for ships of their class, especially that of the first-named vessel; and here it may be remarked that the Italian ships generally have been noted for the weight of their ordnance. The "Principe Amadeo" and "Palestro" each carry one 23-ton Armstrong gun and six 18-ton guns. The "Roma" and the "Venezia," although of more recent design, carry six 18-ton and two 12-ton guns. After these four the most powerful is the "Affondatore," a turret-ship, built at the Millwall Iron Works about ten years ago. Her armor-plating, however, is only five inches thick, and she carries nothing heavier than 12-ton guns. The whole of the older portion of the armored fleet consists of ships ranging from two thousand seven hundred to five thousand seven hundred and eighty tons displacement, and, except in the cases mentioned, the armor is about four inches thick, and the guns mounted in a long tier on each broadside.

THE "ITALIA" AND THE "LEPANTO."

For the Italian government to take the lead in the construction of the largest, the swiftest, and the most heavily-armed ships ever built is a spectacle for which the third Napoleon was probably not prepared when he assisted in the achievement of Italian independence; yet such is the aspect of affairs he would have witnessed had he lived until the present day. Italy has not only put afloat the most powerful guns ever mounted on board ship,—as will be seen are provided for the "Duilio" and the "Dandolo,"—but she has gone still further, in preparing the designs and beginning the construction of two other war-ships, not only of greater dimensions and more stupendous engine-power than ever before floated, but also of novel designs, and more heavily armed than any ships previously built or likely hereafter to be built.

These two monster ships, the "Italia" and the "Lepanto," are now in process of construction, the former at Castellamare and the latter at Leghorn. They were laid down in 1877–78, and the first one will not probably be completed short of four or five years, so great is the work of construction.

THE "ITALIA."

The drawings, kindly furnished by the Italian minister of marine, which are to appear in the work from which this article is taken, convey a clear understanding of the type of this powerful ship, the disposition of the batteries, the armor and motive machinery, and the arrangement of the water-tight bulkheads and decks.

It will be seen from them that the bold step has been taken of dispensing entirely with side armor; and that the great guns, of which there are four Armstrong breech-loaders of one hundred tons weight, are to be mounted on the upper deck in pairs *en barbette*, in a peculiarly placed armored casemate, so arranged as to permit a fire of the guns either on a line with the keel, fore and aft, or in pairs on either beam, or towards any point of the compass.

The hull is of steel, the lines fore and aft being very fine, and is to be sheathed with wood. It is constructed with the usual double bottom, three feet three inches between the skins amidship, and divided into numerous separate cells. Great strength is given to the structure by the bulkheads and decks. Two longitudinal, water-tight bulkheads extend for the length of two hundred and fifty-four feet six inches in the ship. These, together with the transverse bulkheads, divide the hull into fifty-three large compartments, which are again subdivided horizontally by four water-tight decks. The first of these is the armored deck, five feet six inches below the water-line at the sides of the ship, and protected by three inches of iron or steel. This deck extends from stem to stern, and is incurvated at both extremities, meeting at the bow the extreme point of the ram, and thus adding material strength where most needed in the event of ramming an enemy. Immediately above this armored or lowest deck is another six feet above the water-line, constructed of thin iron or steel and covered with wood. The side compartments between this and the lower deck just named, which are divided into water-tight cells, are to be filled with cork, as in the "Inflexible." There is, however, this important difference, that, whereas the last-named ship has a long citadel at the middle of her length protected by heavy armor and relies upon cork only at her extremities, in the "Italia" the cork and water-tight cells afford the only means of preserving stability when the sides are penetrated near the water-line.

Next comes the third or battery-deck, at a height of fourteen feet above the water-line, upon which are to be carried the twelve guns, whose calibre—not yet decided upon—will be moderate compared with the great guns in the armored citadel, and whose lighter metal will admit of rapid, continuous, and concentrated fire. Situated seven feet nine inches above this battery-deck and twenty-five feet above the water-line is the fourth or upper deck, supporting the casemate battery,

seven feet six inches in height, in which are to be placed the great guns, symmetrically disposed in the quadrantal arcs at each extremity of the oval. From within this battery the guns are to be fired *en barbette*, being supplied with ammunition from below the armored deck through armor-plated cylinders or shafts of nine feet inside diameter.

It will thus be seen that armor is only used to keep out shot and shell from the engines and boilers, the magazines, shell-room spaces, and the channels leading therefrom to the upper deck; and to protect the guns in the casemate when not elevated above the battery, and the gunners employed in firing them. But all other parts of the ship above the armored deck, all the guns not in the casemate, and all persons out of the casemate and not below the armored deck will be exposed to the enemy's projectiles.

Remembering that the whole of the controversy raised by Mr. Reed, late chief constructor of the British navy, about three years ago, respecting the "Inflexible," related to the limitation of her armor to the central portion of the ship, it will appear a bold defiance of the principles laid down by that gentleman, to abandon side armor altogether as a means of preserving stability when the ship is pierced at the water-line.

Motive machinery.—This has been designed by Messrs. John Penn & Sons, and is under construction at their well-known works at Greenwich, England. The engines will consist of two sets, of the three-cylinder, vertical, inverted type, to each of the two screw-propeller shafts, making twelve cylinders in all; and the steam will be supplied by twenty-six boilers, with three furnaces each. Twelve of the boilers will be located in three groups aft of the engines, and fourteen in three groups forward of the engines. The after-boilers are placed far aft and the forward-boilers far forward, and between the after-sets and forward-sets of engines there is a space for the passage of the ammunition-shaft. The after-boilers are placed sufficiently high above the keel to admit the passage of the screw-shafts under them.

The engines are of the same type as have been supplied by Messrs. Penn to the British armor-clads "Northampton" and "Agamemnon," the cylinders being of equal diameters, applied to cranks set at equal angles. The steam and exhaust valves are so arranged as to allow the engines to be worked either on the compound or the non-compound system as desired.

Such stupendous engine-power as has been designed for the "Italia" is, of course, required only exceptionally, a moderate power being sufficient primarily and under normal conditions; consequently, the arrangement of the engines here applied possesses several advantages over that of two very large sets of engines to each screw-shaft. First, the objectionable great weight of the working parts of the engines is avoided. Second, under all ordinary conditions of cruising, the two

after-sets of engines and the after-groups of boilers alone will be employed, and they will be worked on the compound system. It will be only in exceptional cases that the necessity for the full speed of the ship will require all the twenty-six boilers and the twelve steam-cylinders.

The total grate area of the seventy-eight furnaces is fifteen hundred and twenty-one square feet. Calculating the power of the engines and the speed of the ship from this element as compared with that of some other of the latest armored ships put afloat, the combined engines of the "Italia" ought to develop an indicated horse-power of not less than fifteen thousand, and a speed of nearly sixteen knots per hour,—a greater power than ever before placed in a single ship, and a speed greater than ever attained by any war-vessel afloat, the "Iris" and the "Mercury" excepted.

The following are the correct principal dimensions and other particulars:

SHIP.

Length between perpendiculars	400 feet 6 inches.
Breadth of beam at water-line	72 " 9 "
" " " upper deck	65 " 6 "
Draught of water forward	25 " 6 "
" " aft	30 " 6 "
" " mean	28 "
Area of immersed midship section	1,770 square feet.
Displacement at load draught	13,480 tons.
Length of armored tower on fore and aft line	88 feet 6 inches.
Breadth " " across ship (extreme)	72 " 6 "
Length " " *per se*	96 "
Breadth " " "	52 " 9 "
Distance of stem from armored tower	170 "
Thickness of sides of tower, including armor	3 " 3 "
" iron armor on tower	21 inches.
Height of centre of heavy guns above water-line	32 feet 8 "
" top of tower above water-line	30 "
" upper deck above water-line, forward	25 "
" " " " " aft	23 "
" " " " " amidships	22 " 6 "
" between upper deck and battery-deck	7 " 9 "
" " battery and second deck	7 " 9 "
" " second and armored deck	7 " 6 "
Depth of lower deck below water-line, amidships, at sides	5 " 6 "
Depth of hold under lower deck	21 "
Extension of ram beyond forward perpendicular	6 " 4 "
Distance of point of ram below water-line	8 " 6 "

MOTIVE MACHINERY.

Number of engines	4 sets.
" " cylinders	12
" " propellers	2
Diameter of propellers	19 feet 6 inches.

Number of boilers	26
" " furnaces (three to each boiler)	78
Length of ship, fore and aft, occupied by engines, coal, and boilers	250 feet.

The estimated weights of the hull, armor, etc., are approximately as follows:

Hull		5000 tons.
Armor of armored deck	1200 tons.	
" " citadel	900 "	
" " ammunition-shafts	246 "	
" " chimneys	552 "	
Total weight of armor		2898 "
Teak backing		114 "

Armament.—The armament is to consist of four of the most powerful guns ever constructed, the 100-ton Armstrong breech-loaders, mounted in the citadel on the upper deck at the extraordinary height of thirty-two feet eight inches above the water-line; six smaller guns on the same deck, one of which is a bow-chaser and another a stern-chaser; and twelve guns on the deck next below. There are also four ports provided for the purpose of ejecting Whitehead torpedoes, while the ram will constitute another powerful weapon.

The 100-ton guns[2] are now being manufactured by Sir William Armstrong, and will be the first heavy guns on the breech-loading system ever turned out in England; indeed, the heaviest breech-loaders ever manufactured. They will be mounted in pairs on revolving platforms within the tower, and will be worked by the remarkably ingenious hydraulic system developed by the talented engineer and partner in the Elswick firm, Mr. George Rendel. The principle is the same as applied to the barbette guns of the British ship "Téméraire."

The cost of each of these ships completed, exclusive of armament, is estimated at $3,834,540.

THE "DUILIO" AND THE "DANDOLO."

The first named of these two powerful armored sister ships[3] was commenced at Castellamare in 1872, launched in 1876, and made her trial-trip in January last. The "Dandolo" is building at Spezia, on the Mediterranean, having been commenced a year later, and will not probably be completed before 1882.

For their general design the naval authorities accepted the view of the British committee on designs, and trusted both for buoyancy and

[2] Drawings of these guns have been prepared for the forthcoming work already referred to.

[3] Drawings of the "Duilio" are shown in the work heretofore mentioned.

stability to their unarmored raft. They, moreover, placed the turrets as they are located in the "Inflexible."

The following are the principal dimensions and elements of these two ships:

	Duilio and Dandolo.
Year in which their construction was commenced	1872 and 1873.
Year in which they will be entirely completed	1880 and 1882.
Place of construction	Castellamare and Spezia.
" " completion	Spezia.
Material of which the vessels are built	Iron.

DIMENSIONS.

Length between perpendiculars	340 feet 11 inches.
Breadth of beam (extreme)	64 " 3 "
Depth of hold	21 " 11 "
Draught of water forward	25 " 5 "
" " aft	26 " 5 "
Displacement at deep-load line	10,401 tons.
Area of immersed midship section	1,466.6 square feet.
Projection of ram forward of perpendicular	9 feet.
Immersion of ram at deep-load line	14 "
Number of compartments	102
" " turrets	2
System " "	Revolving.
Interior diameter of turrets	25 feet 9 inches.

ARMOR.

Thickness of armor at water-line	21.65 inches.
" " " on upper redoubt	17.71 "
" " " " turrets	17.71 "
" " wood-backing at water-line	23.62 "
" " " " of upper redoubt	19.68 "
" " " " " turrets	11.81 "
Depth of immersion of armor	5 feet 3 inches.

ARMAMENT.

Number of guns	4
Weight of each gun	100 tons.
Calibre of each gun	17.72 inches.
Weight of broadside metal	3.87 tons.
" " bow-fire "	2.9 "
" " stern-fire "	1.93 "
Height of main deck above water	11 feet 6 inches.
" " battery " "	15 " 9 "

MOTIVE MACHINERY.

	Duilio.	Dandolo.
Kind of engines	Ordinary.	Compound.
Name of constructor	Penn.	Maudslay.
Indicated horse-power	7,710	7,900
Number of cylinders	4	4
Diameter of cylinders	93.5 inches.	64 and 120 inches.
Stroke of pistons	39 inches.	48 inches.

	Duilio.	Dandolo.
Number of revolutions of engine per minute	84	80
Number of screw-propellers	2	2
Diameter of " "	17 feet 3 inches.	16 feet.
Pitch " " "	19 " 6 "	19 "
Speed of ship	15 knots.	14½ knots.
Number of boilers	10	8
" " furnaces	40	32
Grate surface	899.6 square feet.	811.6 square feet.
Heating surface	23,775 " "	22,991 " "
Boiler-pressure	30 pounds.	60 pounds.
Number of smoke-pipes	2	2

WEIGHTS.

	Duilio and Dandolo.
Weight of hull	3395.5 tons.
" " armor	2559 "
" " wood-backing	239 "
" " guns, their machinery, ammunition, etc.	990 "
" " coal carried in bunkers	1279 "

The hull is built of iron and steel on the cellular system. The double bottom extends for upward of two hundred and thirty feet in length, and is divided both longitudinally and transversely into a great number of water-tight compartments. Each compartment is provided with a branch tube, which is connected with one principal tube in communication with powerful steam-pumps. The tubes are, of course, fitted with the necessary valves, so that in the event of damage to the bottom of the vessel, or for any desirable purpose, any one or more of the compartments may be drained or filled with water.

There is a central armored citadel or compartment one hundred and seven feet in length and fifty-eight feet in breadth, which descends to five feet eleven inches below the water-line. It protects the machinery and boilers, the magazines and shell-rooms, and a portion of the machinery for working the turrets and guns. Forward and aft of this citadel, the decks, which are four feet nine inches under water, are defended by horizontal armor. Over this citadel is built a second central armored compartment, which incloses the bases of the turrets and the remaining portion of the mechanism employed in loading and working the guns. Lastly, above this second compartment rise the two turrets. The turrets are placed at each end of the armored citadel, —not in an even line with each other, but diagonally at opposite corners of it, with the centres at the distance of seven feet eight inches from the longitudinal centre line of the vessel, so that one turret is on the starboard side and the other on the port side. The effect of this arrangement is to render possible the discharge of three guns simultaneously in a direction parallel with the keel.

Only the central portion of the ship and the two turrets are protected by vertical armor. In order to determine the best material and

method of construction for their armor-plates, a course of experiments was undertaken at Spezia with the 100-ton gun and guns of ten and eleven inches calibre, discharged against targets constructed on four different systems of steel and iron from three manufacturers. The results of these experiments induced the Italian government to adopt steel for armor in preference to iron. They were led to this determination for the reason that the projectiles fired from the 100-ton gun failed to pass through a target faced with twenty-two inches of that metal, while similar projectiles from the same gun perforated targets composed of iron plates of the same thickness. The armor of the central portion of the vessel is 21.65 inches in thickness. The armor of the turrets is composed of solid plates 17.71 inches in thickness, resting upon teak backing. The decks are protected by horizontal armor of iron and steel, the former being under the latter.

The original intention was that the armament should be composed of two 60-ton guns in each turret; subsequently it was decided to employ 100-ton guns, and the opinion prevails that this decision was reached after the fact became known that the "Inflexible" would be armed with 80-ton guns. These 100-ton guns, four for each ship, have been manufactured by Sir William Armstrong at the Elswick Works, Newcastle-on-Tyne, England. They are muzzle-loading, and are built up on the well-known Armstrong system. The "Duilio" is armed with a heavy projecting ram, and she is also to be provided with apparatus for discharging the Whitehead fish-torpedoes. Besides these powerful means of offense, there is to be an arrangement for carrying a rapid torpedo-boat.

The "Duilio" is driven by twin-screws. The motive machinery has been furnished by Messrs. John Penn & Sons, Greenwich, England, and consists of his old type,—a pair of trunk-engines to each screw. The steam is supplied by the ordinary box-boilers.

The heavy forgings for the ship were made in Italy. The frames, beams, and plates for the hull, in fact, all the iron and steel entering into the construction of the vessel, were made in France. All the armor-plates were ordered from Cammell & Co., Sheffield, England, and the guns and machinery for working them are also of English manufacture, thus leaving only the construction and labor entering therein to be performed by the Italian engineers.

TRIALS OF MACHINERY AND GUNS.

When the ship was ready for trial with all weights on board, the mean draught was twenty-six feet and nine inches, or one foot more than was calculated in the designs. With this draught, on the 16th of February, 1880, a speed-trial was made on the measured mile, when, with eighty-four revolutions of the engines and seven thousand seven

hundred and ten indicated horse-power, a speed at the rate of fifteen knots per hour was realized.

The recent trials of the guns after being mounted on board the "Duilio" have been attended with a serious disaster, which has in some degree impaired public confidence in them and in the Armstrong system of construction. On the 6th of March, one of the guns which had already fired numerous rounds satisfactorily, on being loaded with the maximum powder-charge of five hundred and fifty-one pounds and a projectile of two thousand pounds, burst in such a way as to break the steel inner tube just at the base of the shoulder where the bore enlarges into the powder-chamber, and pull asunder the outer coils just behind the trunnions, so that the breech portion was driven violently against the turret wall, the fore part remaining on the carriage. No lives were lost, though several men were severely wounded; the turret was not seriously injured, and the gun can be repaired without great difficulty.

The explosion has not yet been sufficiently investigated under official auspices to enable its causes to be fully determined, or its bearing upon the strength of the "Duilio's" armament and upon current artillery controversies to be exactly perceived. That the gun yielded to a longitudinal strain is apparent. That it did so from any inherent defect in the system of construction or in the material used in this case is improbable. The weakness was undoubtedly due to the fact that the gun having been built before the enlarged powder-chamber came into use, the inner steel tube, upon which longitudinal strength depends, had been reduced below the proper thickness in the rear portion by the subsequent boring out of the chamber, and this theory is made very probable by the fact that the rupture occurred at the very point where the reduction of thickness takes place. This defect can be remedied by the introduction of a tube having thicker metal at the rear end.

The "Duilio" is armed with four of the heaviest and most powerful guns now afloat on any ship, and it was believed that if successful in all respects she would be the most formidable fighting-machine, both for offense and defense, in the waters of continental Europe. It remains to be seen whether this estimate is a correct one, or whether the prediction of the eminent ex-chief constructor of the British navy —that she would capsize in the first engagement if seriously injured by shot in the unprotected parts—will be fulfilled.

The "Dandolo," the sister ship of the "Duilio," as has already been stated, will not probably be completed until the end of 1882, as the financial resources of the Italian admiralty will doubtless be taxed to the utmost during the coming year to complete the first of the great ships. The "Dandolo" is to be in essential features of construction the same as her sister, but there is to be an important difference in the

machinery. This has been designed and furnished by Messrs. Maudslay, Sons & Field, of London, and consists of a pair of their inverted vertical compound engines to each of the two screw-propellers. The engines are to be supplied with steam from eight boilers fired from both ends, having in all thirty-two furnaces, four of the boilers being located forward and four aft of the engines. The pressure of steam is to be sixty pounds per square inch, the maximum indicated horse-power seven thousand nine hundred.

The estimated cost of each of these ships, exclusive of armament, is $3,500,000.

There is a positive limit to the dimensions of every construction, beyond which it is not wise or safe to go. This point was overreached in the case of the mercantile ship "Great Eastern," the cost of which to the owners was very great. It is reasonable to believe that the Italian naval authorities have gone beyond the judicious limit in the designs of their last ships laid down. The great cost of the guns and the machinery to work them, the still greater cost of the ship, and the expense of maintaining the stupendous and unwieldy bulk, will probably not be the most serious difficulties. The practical question of what will be the effect upon the ship or the men employed at the guns of simultaneously firing the whole of the four guns, of one hundred tons each, or, if that is regarded as not likely to occur in warfare, of firing the guns alternately in pairs, has yet to be demonstrated. Until it is known what will be the effect of this firing upon the deck-plating and upon whatever is near the guns, to say nothing of other questions, it would seem unwise to proceed with the construction of ships of still greater dimensions and of guns still more stupendous.

UNARMORED SHIPS.

The present unarmored fleet of Italy consists of the following vessels: one cruiser of the rapid type, the "Cristoforo Colombo"; two wooden frigates, the "Vittorio Emanuele" and the "Maria Adelaide"; three screw corvettes, the "Garibaldi," the "Caracciolo," and the "Vettor Pisani"; four paddle-wheel corvettes, the "Governolo," the "Guiscardo," the "Archimede," and the "Ettore Fieramosca"; twenty gunboats, including the "Scilla," the "Cariddi," the "Veloce," the "Sentinella," the "Guardiano," the "Ardita," and the "Confidenza"; five screw dispatch-vessels, the "Staffeta," the "Agostino Barbarigo," the "Marcantonio Colonna," the "Rapido," and the "Vedetta"; five paddle-wheel dispatch-vessels, the "Sesia," the "Esploratore," the "Garigliano," the "Anthion," and the "Sirena"; six screw transports, the "Europa," the "Washington," the "Città di Genova," the "Città di Napoli," the "Conte Cavour," and the "Dora"; three torpedo-boats, the "Pietro Micca," the "Sebastiano Veniero," and the "Andrea Pro-

vano"; and many smaller vessels. Not all of these are completed, and besides those enumerated two iron vessels of improved type are in process of construction.

THE "CRISTOFORO COLOMBO."

This is a wooden corvette, and the first vessel of the rapid type turned out by the Italian government. She was built at Venice. The beams and knees are of iron, while the hull is composed of seasoned Italian oak. It is put together in the very best and strongest manner in which a wooden vessel can be built. The dimensions, as approximately correct as could be obtained, are as follows:

Length, total	270 feet.
Length on the water-line	250 "
Breadth	36 "
Draught of water aft	17 "
" " forward	13 "
Area of midship section	476 square feet.
Displacement	2500 tons.

On the berth or living deck there are twenty-three air-ports on each side, seventeen inches by eighteen inches, which afford more light and air than are admitted into our vessels of similar class. The quarters for both officers and men are comfortable, and the disposition of the lower deck arrangements good, but the upper decks seem to be very much hampered by cabins, engine-room sky-light, steering-wheel house, two smoke-pipes, top-gallant forecastle, etc.; but as the battery is light and the rig that of a barquentine, less room is needed than in many other vessels. The battery consists of two rifled guns on either broadside, and one bow-chaser of $4\frac{3}{4}$-inch bore. There are also two mitrailleuses to be used in the event of torpedo attack.

The motive machinery was furnished by Messrs. John Penn & Sons, of Greenwich, England. It consists of one pair of their patent inverted vertical three-cylinder engines, applied to a single screw-shaft, with the cylinder so arranged and adjusted by a system of valves as to be worked either on the compound or non-compound principle as desired. The cylinders are of equal diameters. The principal dimensions of the engines and boilers are here given:

Number of cylinders	3
Diameter "	$61\frac{3}{4}$ inches.
Stroke of pistons	$37\frac{1}{2}$ "
Number of air-pumps	2
Number of independent circulating pumps	2
Cooling surface	5000 square feet.
Diameter of screw-propeller	17 feet.
Pitch " "	19 " 6 inches.

Number of blades	4
" " boilers (cylindrical), three furnaces each.	8
Diameter " "	12 feet.
Length " "	9 "
Grate surface	896 square feet.
Heating "	9000 " "

The amount of coal stored is five hundred tons, and the space occupied by machinery, boilers, and coal is one hundred and twenty-seven feet in the length of the vessel below the lower deck, besides the space between decks consequent upon the top of the cylinders standing nearly on a level with the spar-deck. The engines were designed to develop the maximum indicated horse-power of four thousand, and the speed on the measured mile was estimated to be at the rate of seventeen knots an hour. We do not know whether or not this speed was ever attained, but it has been authoritatively reported that with eighty-six revolutions the speed of 16.33 knots has been reached, the horse-power being three thousand seven hundred and eighty-two.

It was believed by the constructors and engineers with whom the writer conferred in Venice, when the vessel was building, in November, 1875, that the hull did not possess sufficient strength to sustain for any lengthened period the power necessary to produce the speed for which the machinery was designed.

The cost of this vessel is reported to have been $514,620.

The Italians have recently added two new dispatch-vessels to their fleet, the "Staffeta" and the "Agostino Barbarigo." The "Staffeta" is built of iron and is three-masted. Her dimensions are as follows: length on the water-line, 253 feet 3 inches; breadth, 31 feet 11 inches; mean draught of water, 14 feet 4 inches; sail surface, 8541 square feet. The armament consists of five 4.7-inch guns. The engine, which was built in Italy, has developed 2140 horse-power, and the speed has been recorded at 14½ knots an hour.

The "Agostino Barbarigo" is built of steel and is intended for high speed. Her principal dimensions are as follows: length on the water-line, 216 feet 6 inches; breadth, 24 feet 1 inch; mean draught of water, 10 feet 9 inches; sail surface, 2433 square feet. She is armed with three 4.7-inch guns. Her engine was built in England, and is expected to develop 1676 horse-power. Another vessel similar to the "Agostino Barbarigo," the "Marcantonio Colonna," is in process of construction.

The Italian naval authorities seem to have arrived at definite conclusions regarding their future fleets and are acting vigorously upon them. They are not concentrating the whole of their attention upon armored ships, for in addition to the "Cristoforo Colombo," as has been stated, other vessels of the rapid type, intended for high speed, are in course of construction, and these later ships, being built either of iron

or steel, will be of sufficient strength to sustain great engine-power. Steam-launches, built in England, to use both the Whitehead and outrigger torpedo, are also being added to the fleets.

The iron ship-yards of Italy are building ships and training workmen for the government, and the proportion of iron to wooden ships now building is greater than in any other country except England.

If the "Duilio" and the "Dandolo" prove to be entirely successful, Italy will possess the most powerful ships in continental Europe; and should the still larger ships, the "Italia" and the "Lepanto," turn out as calculated by the designers, Italy will possess a fleet of fighting ships more than a match for any continental power, France excepted. These, in addition to her cruisers of the rapid type, will cause her co-operation to be valued and her enmity to be feared even by England, France, or Russia, and certainly by any other European power.

INDIAN STORY-LAND.

EVEN before the North American pioneer had hewn his way through the dense forests of the East and civilization had begun her triumphal march from the Mississippi to the Golden Gate, the region commonly known as the Black Hills and Big Horn country was the favorite home of the savage tribes of the Northwest. Within its confines was embraced the vast territory lying between the Missouri and Yellowstone Rivers; it was bounded on the west by the "Divide" of the continent, and on the south by the Sweetwater and North Platte, though these streams interposed no barriers to frequent incursions into the broad plains of Southern Wyoming, Colorado, and Nebraska. The Sioux, or Dakotas, embraced many tribal organizations, principal among which were the Ogalallas, Brules, and Uncapapas, who inhabited the region traversed by the North Platte and Niobrara, the Yanktonnais and Minneconjoux along the Missouri, and the Mandans, Arickarees, and other tribes farther north and west. To the south were the Pawnees, traditional enemies of the Sioux, the Arapahoes, and last, but not least, the Cheyennes, for many years the bravest and most formidable of all the warriors of the West. Indeed were they lords of the prairies, and ranged as far north as the Yellowstone and southward to the *Llano Estacado*, or Staked Plain, of Texas, in the very heart of the land of the Kiowas and Comanches. But their power has been weakened by almost constant warfare with the whites, and their hearts were broken by the crushing defeat inflicted upon them by several companies of the Third Cavalry, under the command of the gallant Wessels, about a year since, near Fort Robinson, Nebraska, in which affair conspicuously and honorably figured Vroom, Chase, and brave old Lawson, whose recent gallant conduct in the engagement with the Utes in Colorado is known of all men to whom the history of that bloody combat is familiar. The Crows, always at war with the Sioux, held sway on the Big Horn, the Snakes held the Wind River country, and the Utes made their homes in the Cordilleras of Colorado. The various tribes of Sioux spoke the same tongue, but recognized no central authority; they were allies rather than one nation. In their intercourse with other tribes the sign-language common to all Indians was resorted to, and had to meet all the requirements of trade, courtesy, and diplomacy, the demands upon

it for this latter purpose being great, as the Indian's love for making treaties is as strong as the white man's inclination to break them.

The derivation of the word Sioux is in doubt, it being claimed by some that it is the name given the great tribe by whom it has been made famous by the Canadian *voyageurs*, whilst others declare it to be aboriginal. As adverse to the latter theory, it may be stated that the Dakotas repudiate the word Sioux, and their enemies use it as a term of reproach. Their original name appears to have been Sacota, afterwards corrupted into Dakota, but that by which they love to be called, and which, spoken in their presence, causes their eyes to brighten and forms dilate, is Teton, taken from a celebrated chief who, many years ago, as the tradition runs, led his warriors from the Mississippi to the Missouri, and crossing the latter stream, drove the smaller tribes from its valleys, and in time overran the whole country, from the Platte to the Yellowstone and from the Missouri to the Rocky Mountains. But civilization on luminous wings was soaring westward, and into this red man's Eden came at last the pale-face, to find a land without a roof and a people without a history. To the Indian's mind his fatherland was perfect, and his eye beamed with delight when he gazed upon a diversified landscape of prairie and mountain, valley and stream. Its great extent enabled him to roam at pleasure and pursue the sports of the chase where game was most abundant. The clear, cold streams coming down from snowy mountain heights coursed through beautiful valleys, where heavy timber afforded shelter and firewood, and broad reaches of meadow, stretching far out from the foot-hills and covered with nutritious grasses, furnished an inexhaustible supply of forage for the large herds of ponies which constituted the chief wealth of the North American aborigines. Buffalo abounded, and the meat of this animal, dried in the sun, formed the staple article of food during the long winters when snow covered the ground and hunting was suspended. Mountain sheep clambered up every bluff, broad-antlered elk stalked through the glades, the shy Virginia doe sought covert in the willows, antelope grazed on the plains, and the fleet black-tail deer made his lair among the foot-hills. Grizzly, black, and cinnamon bears were found in the mountains, and the jack-rabbit, gray wolf, and coyote haunted the *pampas*. Of birds, but few species were native to the country, the blackbird, chicken- and sparrow-hawks being the most numerous, whilst an occasional eagle would make his eyry high up on some beetling crag. Ducks and other birds of passage were abundant. Latterly, since the inroads made by the whites, who, pursuing the wake of the army, are rapidly settling in the most desirable parts of the country, prairie-chicken, grouse, and other birds that follow civilization are appearing, and before many years shall have elapsed one will see the robin-redbreast skipping among the mountain cedars, and hear the thrush and meadow-lark making music in the moorlands.

Tongue River, Goose Creek, and the tributaries of the Yellowstone which issue from the canyons of the Big Horn Range on the northern side abound in trout and other fine fish. Clear Creek and the Piney, which flow to the eastward and empty into the Powder River, have no trout, though an angler for the finny beauties, standing on the banks of either stream under the shade of overhanging cottonwoods and looking down into the clear waters dashing over bowlders and forming many a ripple and cascade, would imagine himself in the very paradise of Isaak Walton.

The traveler to these parts, whether his point of departure from the railroad be Cheyenne or Rock Creek, a hundred miles farther west, would traverse a rolling and picturesque country, the chief object of interest being Laramie Peak, which, rising to an altitude of ten thousand feet, is the most beautiful of the giants of the Northern Rockies. About its base flows the river of the same name, a fine stream, which, having its source in the Medicine Bow Mountains of Colorado, skirts the famous Laramie Plains, and trending eastward, breaks through the Black Hills of Wyoming and empties into the North Platte at Fort Laramie. This post was originally established as a trading-station by the American Fur Company, but in 1849, when the gold excitement was at its flood, and the stream of emigration was pouring across the continent to California, the government caused quarters to be built here for troops, it being found necessary to afford protection to the overland road. I have been often told by old plainsmen who frequented Laramie in the overland days, that rumors of the golden treasures of the Black Hills of Dakota, now so widely known, were constantly drifting into the post, and that the Indians who traded there brought, besides robes and pelts, little bags of golden dust, which they gave in exchange for paints, beads, and other articles of tawdry finery with which they delighted to bedeck their persons. Through Laramie the old stage-route passed, and it was on the division terminating at La Prêle Creek, near Fetterman, that Slade, of whom Mark Twain tells us so much, ran his career of successful crime. Near this point, in 1854, occurred the Grattan massacre, one of the series of frightful tragedies that have made this region historic. In July of the year mentioned the Indians to the number of several thousand had gathered near the post to obtain the supplies the government had contracted to furnish them. Weeks beyond the time specified for their delivery had elapsed, and famine stalked in the midst of the savage hosts. One day a steer was missed from a Mormon emigrant train in camp on the river, and upon inquiry it was learned that it had been killed by Indians. Complaint being made to Lieutenant Fleming, commanding the post, Lieutenant Grattan with thirty men was sent to enforce the surrender of the parties who had committed the depredation.

Lieutenant Grattan was met by Mat-to-io-wah, a chief of good

standing with the military authorities, by whom he was told that he, Mat-to-io-wah, knew that his young men had killed the ox, that he was sorry and would make good the loss, but he wound up by saying that he would not surrender the offenders. Grattan declined the proffered compromise, and informed the chief that he would attack the village, to which Mat-to-io-wah replied, "Very well; there are a good many of us here, and I advise you not to do it."

The attack was made, and Grattan and his entire command killed. Thus began an Indian war which, with slight intermission, continued nearly the quarter of a century, and has been marked by massacres among the bloodiest of modern times. This affair was supplemented at intervals by attacks upon emigrants, and during the late civil war a grand raid was made upon the stage-stations and ranches along the overland route. Stock was driven off, many people killed, and the perils of travel so greatly increased that the mail line was changed to what was known as the Bitter Creek route, which passed up the South Platte, crossed the mountains at Cheyenne Pass, and united with the old road near Fort Bridger. The valleys of the North Platte, Laramie, Sweetwater, and other streams hereabouts are filled with cattle now, and ranchmen are taking up claims in every part of this section.

On the road between Forts Laramie and Fetterman one crosses La Bonté Creek, where a dozen graves call to mind the early days of actual military occupation of the country west of the first-named post. All along the route from Julesburgh to South Pass, at intervals of ten or twelve miles, are the ruins of dismantled stage-stations, where desperadoes held high carnival in days of yore, and timid, tired travelers trembled for their lives. The histories of these places are written in the sod, under which at every station lie the bones of some poor fellow who died with "his boots on." At Fort Fetterman, seventy-five miles from Laramie, the North Platte is crossed, and the road northward for ninety miles traverses a country where the principal vegetation is sage-bush, and the water in the few sluggish streams is very brackish.

At Powder River is passed old Fort Reno, which, with Fort Smith on the Big Horn and Phil Kearney on the Piney, was dismantled and abandoned in 1868, when by treaty this country was relinquished to the Sioux. The Big Horn country proper begins, as you go northward, at a small stream called Crazy Woman Creek, which, rising among the southern peaks of the Big Horn Mountains, *debouches* into alkali lands, and, making a bend to the east, after a journey of forty miles, mingles its waters with the murky floods of the Powder. The name is American, having its foundation in a dim tradition of overland days, wherein figures a young woman who had been a prisoner in the hands of the Indians, and when recaptured by her friends was wandering along the banks of this stream insane. One cannot fail to observe here, as elsewhere, the inferiority of our nomenclature as com-

pared with that of the French, Mexicans, and Indians. The streams named by our own people have atrocious titles, and some of these are multiplied to the utter confusion of travelers. If I have camped on one Sage Creek I have on a score; it is impossible to make a day's march anywhere on the plains without crossing the Muddy, Sand, or Horse Creek, and one of the finest streams on the continent has been consigned to everlasting obloquy by the odorous name of Stinking Water! The long list is relieved here and there by pretty titles, as the Rosebud and Box-Elder; and others are very quaint, as, for example, the Wagon Hound, Bedtick, and Log Cabin. A year or so ago I happened to be present when the superintendent of a recently opened stage-route asked of the keeper the name of a station. The reply was "Sage Creek." The fact that there was neither sage-bush nor creek thereabouts was of no consequence, and one more would have been added to the innumerable caravan of Sage Creeks to go rounding down the ages had I not interposed a mild objection and suggested another name. The location was in a beautiful little park at the base of the War-Bonnet Mountains, and although the name I selected had no special merit, I nevertheless feel entitled to the thanks of all travelers in those parts. Twenty miles north of Crazy Woman one finds himself on Clear Creek, a beautiful mountain torrent, whose waters, ice-cold from their snowy fountains, come foaming through a superb canyon, near the *embouchure* of which has been built a military post, named in honor of Lieutenant McKinney, a young Tennesseean of distinguished family, who lost his life whilst leading a charge in a battle fought near this point in the winter of 1876–77. Lieutenant McKinney was an officer of rare promise, for whom honor, training, and valor seemed to point the way to distinction, and regret for his early death, more keenly felt in his own gallant regiment, was general throughout the service.

Beyond Clear Creek the aspect of the country changes: the grass is luxuriant, sage-bush almost entirely disappears, many fine vistas of the mountains are presented, and the general features of the landscape are in pleasing contrast with the desolate steppes over which the traveler has pursued his way since leaving Fetterman. It was on Clear Creek and its tributaries that the Fifth Cavalry under its colonel, General Merritt, lay in camp during the summer of 1878, as a corps of observation against Indians who might be tempted to enter once more the red man's paradise. A few years since, when I passed through this region *en route* to join General Crook, then operating against the Sioux, the issue of the campaign was considered doubtful, but so thoroughly has the Indian problem been solved that one is as safe on Clear Creek as in New York, and the feeling of security was so great, even two years ago, that several ladies spent pleasant weeks in our camp. In fact, whilst they were with us camp-life was a pic-

nic, the days being devoted to drills and the evenings, not unfrequently, to impromptu musical *soirées*, our official family possessing not a few good voices. Be it not inferred, however, from this that there is much of the *dolce far niente* in field service on the border. Scenes like these, when the social atmosphere of the camp is softened and refined by the presence of woman, are exceptional, and looking back over a long experience on the frontier, I can recall but few. In very truth, the army officer has hard service and hard knocks for the rewards he gets, and I venture the assertion that he is more ill repaid than the military servant of any other great government. In giving him pay sufficient to meet the requirements of his position, the government is satisfied that its duty is performed, and offers no additional rewards for distinguished service. Nothing the officer wears is to his countryman symbolic of some conspicuous act of gallantry; "no scarfs, garters, gold amuse his riper years;" no star blazing upon his breast flames forth the story of the crowning act of a great military career. He well understands that such guerdons, dear to every true soldier's heart, are not for him to expect; acting upon that loftier principle, to do duty for duty's sake, he finds solace in the philosophic reflection that, if he survive, the afternoon of life will be spent in moderate comfort on the retired list, and if he fall by the bullet of the savage, though prairie rains uncover his bones and a prairie sun bleach them, his memory may be kept green by a military post bearing his name.

A mile or two beyond Clear Creek is a pretty lake named for Father de Smet, a Romish priest of great zeal, who came to this region more than half a century ago and lived for years among the Dakotas. Even here into the vast unknown, where of white men the Canadian *voyageur* alone had ventured, the Catholic Church, which sends her propagandists into every land under the sun, found among her Jesuitical priesthood one with courage to penetrate and teach to wandering Sioux the mysteries of Rome, and plant at the very foot of the Rocky Mountains the Banner of the Cross. De Smet's labors produced little if any permanent effect upon the savages, and the religious feeling which began to develop whilst he resided in their midst has faded away or been blended with a feeling of veneration for the good father, whom these wild people loved and respected. The lake which commemorates his name is situated in a pretty basin environed by grassy hills, about ten miles from the mountains, its general direction being north and south, and its dimensions one and a half by five miles. It has but one source of supply and no visible outlet. Its waters are very strongly impregnated with alkali, and their depth varies from a few feet near shore to nearly forty. One or two clumps of box-elder constitute the only timber, and there are no rocks save those of eruptive origin, which, lying along shore and on adjacent hills, furnish abundant evidences that the

bed of the lake is the crater of an extinct volcano. Lacking many of the elements of beauty, in a country where large sheets of water are rare the lake is very pretty nevertheless. Standing upon one of the low knolls on the south side, could one but limit his vision it were easy to imagine himself on the shore of some charming bay, for here are reaches of sand and volcanic scoria and slag instead of shells, and when the winds fresh from the mountains sweep down the valleys, the surf breaks ocean-like on the beach, and the white-caps of the miniature waves sparkle and gleam in the bright sunlight in pleasing contrast with the body of the waters that under these circumstances assume the dark tints of the sea. And when it is clear and calm, a summer afternoon, from the mountain heights the shadows of evening come trooping down with broad pencils of light between, and creep slowly across the landscape, wrapped in a soft veil of dreamy haze, while above bends the sky with not a cloud to mar the purity of color which is seen in such perfection at high altitudes near the Rocky Mountains. But the sun does not always shine; rains at certain seasons are frequent, and occasional hail-storms terrific. Rain-storms arise usually in the afternoons, and are accompanied by thunder and lightning. They come suddenly and as quickly pass away, leaving their trailing splendors behind. Rainbows are frequent, and these phenomena, beautiful everywhere, are especially so here, where, owing to the superior refractory power of the dry, rare atmosphere, the colors of the solar spectrum are perfectly and exquisitely displayed.

From Lake de Smet we observed the solar eclipse of 1878, and the atmospheric effects were exceedingly beautiful. As the phenomenon progressed mountain, plain, and valley were flooded by a soft violet twilight, which, as the obscuration progressed, and the rim of the sun's disk diminished to a faint, uncertain crescent of brightness, deepened until the earth wore that cold, tender, wan look we see on the face of the dead.

West of the lake are the several canyons of Rock Creek, one of which, remarkable for its rugged walls, where a combination of the tints of red and green makes a dainty bit of coloring, and for the pretty little grotto just at the point where the waters burst forth, we called the Enchanted Park. In the vicinity of Lake de Smet there are large quantities of petrified wood and beds of coal underlying the surface of the ground. In fact, it is probable that coal is generally distributed throughout this region, for I have seen it in localities wide apart, and the Yellowstone River cuts its way through several fine strata.

In the mountains hard by the lake one comes unawares upon a solitary grave marked by a rough headboard, whereon, with difficulty, may be read the simple inscription, "Mamie's Friend." These words furnish the sole clue to the identity of the lonely dead. During the

Big Horn gold craze of '77 a party of miners came upon the mutilated remains of a man lying in a ravine, with empty cartridge-shells and other evidences of a desperate struggle scattered about. In an inner pocket, where they had escaped the eyes of his savage murderers, were found the picture of a fair young girl and a letter post-marked Chicago and signed "Mamie." From the tone of this letter, overflowing with the tender evidences of a fresh virgin love, the writer was manifestly the poor fellow's sweetheart, and the rude miners, with gentle hands and hushed voices, laid letter and picture away with the bones of "Mamie's Friend."

On all the timbered water-courses in this section are found the *débris* of old Indian camps, such as lodge-poles and worn buffalo-robes, for during the period intervening between 1868, when it was reserved by treaty to the Sioux, and 1876, when it was a second time occupied by military force, a vast savage population made their homes at the base of the Big Horn Mountains. They lived as they had done for centuries, in absolute barbarism, making no progress themselves, and stolidly resisting all efforts of the government to bring them under the influences of civilization. They raised no crops, though millions of acres of rich arable land were ready with the rudest cultivation to produce in abundance; they built no houses, though timber was plentiful, preferring to live in "tepees" constructed of lodge-poles and skins. To those most familiar with the customs, character, and capabilities of these nomadic people, it appears plain that in communities they can never be civilized, and as the breaking up of their tribal municipalities and scattering them broadcast over the land that they may be brought individually in contact with the whites is, under existing circumstances, impracticable, the ultimate extinction of the race by constant attrition with our own seems inevitable.

The two races certainly cannot live at peace so long as the reservation system is retained, for the Indian will commit depredations whenever his taste for rapine and blood can be indulged, and the white man will trespass upon the premises of his red neighbor utterly regardless of the latter's bill of rights.

It is now proposed to impose upon the savages the responsibilities of citizenship; to settle them upon homesteads; to guarantee to them the rights of persons and property; to inflict upon offenders of their race the same penalties visited upon other criminals; in fine, to bring them under the operation of law, and to require them to live in conformity with precise statutes. But it is doubtful if this procrustean plan will meet with success, for the Indian is naturally distrustful, and refuses to adopt the customs and ways of his white brother. A vagabond by nature, he abhors work, looks upon the telegraph and railroad as contrivances for his ruin, and lives on in the same old shiftless fashion; his loftiest ambition to excel in battle, his keenest delight to tear the

scalp from the reeking head of his victim. It is a curious fact that the more the savages are brought in contact with settlers the more degenerate they become, and this is especially observable among the women, for virtue, common with the females of the wilder tribes, is rare at the agencies. Nothing better forecasts the future of the Indian than the melancholy story of the Delawares, that proud people from whom Cooper selected the characters to weave his web of romance about the Hudson and Horicon. They have lived for years in the Indian Territory, have been fostered and cared for by the government, but all efforts have been vain. The very name of their present chief, —Fall Leaf,—the last probably in whom the remnant of this once mighty race will recognize authority, is suggestive of decay.

Contemporaneous occupation of the country by the two races seems impossible, and the inexorable law of the survival of the fittest renders it imperative that the weaker give way for the settlement of this magnificent domain by the hardy Anglo-Saxon, who will develop its resources and make the waste places to blossom as the rose. Looked at from a sentimental point of view it is sad to reflect that no more can the red man enter this home of his fathers, this very dreamland of savage minstrelsy, where a faint legendary mist seems to hang over the empurpled heights, and the glamour of romance to touch the plains and haunt the solitudes of the forests. These scenes are dear to his heart, for here "he was native and to the manner born," and in childhood has seen under the shadows of the mountains the warriors assemble when the signal-fires blazed havoc, exulting in the prospect of battle, like the Highland clans as they gathered in tartan and plaid among the heather-covered hills of Scotland and the pibroch sounded "Blue Bonnets over the Border." Boabdil el Chico, last of the line of Moorish kings, as he halted on the hill-top and, taking one long, lingering look at the towers and turrets of the beautiful capital, alike the scene of his glory and his shame, saw along the banks of the Zenil the white tents of the Christian hosts shining fair under the bright sunlight, carried not in his breast a heavier burden of sorrow than does the Teton brave who from the heights of the Panther Mountains casts his eye slowly and sadly around the horizon's sweep, and with a stifled sob for his lost estate turns his back forever upon the snowy crests of the Big Horn and the broad valley of the De-ja-a-gie.

Aside from the sentimental view of the subject there is little to make the disappearance of the Indian race matter of regret, and this view never long retards the march of events. Here on the American frontier, in the bush of South Africa, and the tangled jungles of India the irrepressible conflict—civilization against barbarism—goes on, and the Anglo-Saxon is always to the fore. The result is ever the same: savage resistance may retard but can never prevent it. Crazy Horse and Sitting Bull overthrow Custer and his gallant squadrons, but the

wild hosts vanish before the legions of Crook and Terry. Three companies of cavalry far away in the Colorado highlands, one-third their numbers dead and wounded, are surrounded by yelling Indians, but when Merritt rides out of the darkness, "officers' call," glad signal of deliverance to the beleaguered, is a warning to the savages of that wrath whose uplifted arm is only stayed by orders from Washington. The Twenty-fourth Foot is cut down at Rorke's Drift, but no Roman story is finer than the episode of Isandula, marking the turn of affairs and shining like a star in the heroic chronicle of Zululand. The outbreak at Meerut carried consternation to English hearts, but the mailed hand of British power clutched the mutiny by the throat, and outraged authority, with a courage sublime in its indifference to public opinion and clamor, inflicted upon the Sepoy rebels that terrible yet righteous punishment at which the mistaken moral sense of the world revolted.

Better for us, far better for the Indians, could we in dealing with them rise to the dignity of the mother-country in this one of the most conspicuous incidents of her glorious history, and throwing sentiment to the dogs, punish the savage for his atrocious crimes swiftly, severely, mercilessly.

It is hardly probable that the Indians will give much more trouble in the Big Horn and Black Hills country. A cordon of military posts in telegraphic communication surrounds it; towns are being built, and settlers are constantly taking homesteads in desirable localities. The Black Hills are permanently populated, and in the valley of the Popo-a-gie, west of the Big Horn chain, there is a large, prosperous agricultural community, the centre of which is Lander City, with a thrifty population of several hundred souls. Here one finds churches and a good school, evidences that the better classes of people have obtained the ascendency and intend to keep it. This can be said truly of few frontier towns, for it is one of the anomalies of our western growth that the gambler, desperado, and prostitute are the pioneers of civilization, and blaze the path along which trade, wealth, and culture follow.

Men fond of adventure or in pursuit of gain, others who left their country for its good, flock to the border, and with them women, still "fair in the fearless old fashion," to reap here that harvest of thistles which follows after the roses and raptures of sin. Matter for wonder be it that anything short of the martyr's hope of eternal reward can induce law-abiding people to venture into such a community. Murder and highway robbery are common occurrences; things gradually grow worse, until for their own protection men who have themselves excelled in crime take the law in their own hands, when Judge Lynch holds court under the starlight and executes sentence in the byways. The halter proves a good anæsthetic and affairs begin to improve, but between the settlement of every community and the day marked by the ascendency

of the better classes there intervenes a period during which the desperado is in his glory,—a terror to the timid and a demigod to the rabble. He runs a royal course until some one bolder than himself comes forward, by whom he is made to "take water" or is shot down in his tracks, and then another wears the crown and the cry goes forth, "*Le roi est mort; vive le roi!*" In this one sees but the exaggerated phrase of that trait of human character which the greatest of all novelists in the greatest of all novels portrays so forcibly in George Osborne's letter home, when he writes from school, "There has been a fight here between Cuff and Dobbin. Cuff, you know, was cock of the school. They fought thirteen rounds, and Dobbin licked; so Cuff is now only second cock." Human nature is very much the same everywhere, whether among the school-boys of merry England or the *miserabile vulgus* of the American border; and just as Cuff was discrowned for being "licked" and not because Dobbin was right, so the frontier bully loses caste only with defeat.

There are a number of flourishing towns in the Black Hills, chief of which are Deadwood, Hill, Rapid, and Custer Cities. The scenery is exceedingly fine, and a few years hence, when a railroad shall have made the Hills accessible to the world at large, many tourists will be attracted thither.

The water is good, the soil fertile, producing small grain and vegetables, and the climate fine, though the season is too short to mature corn. The placer diggings have been exhausted, but many quartz mines are being worked and stamp-mills reducing large quantities of ore. The gold fever, which began after General Custer's glowing report of the treasures he had seen, culminated in 1877, when a vast population poured into the Hills. Old miners from California, Nevada, and Montana flocked thither to harvest the golden grain in pastures new; "prospectors" who had traversed the cactus-covered deserts of Arizona, with a faith that wealth waited only on patience, hurried to the last El Dorado to grasp that which had allured them so far. The frenzy raged in every breast, and, like Abou Ben Adhem, each one believed his turn would come next. At the bottom of the pebbly stream credulity saw the assurance of wealth; hidden in the emerald hill-side or buried in the golden valley lay fabulous treasure that Fortune longed to bestow upon those of her children whose belief in her bounty surpassed all reason and subdued every passion save avarice. Mining towns sprung up like magic, and society at once crystallized into the type common to our frontier settlements. With the many rough yet honest seekers after gold were mingled the worst elements of humanity. Gentlemen of too much reputation found congenial companionship among ladies with none; the saloon and dance-house were the resorts of all classes; the desperado shot his victim with impunity, and the gambler filched from the miner the fruits of his toil. These

crimes failed to awaken the dormant conscience of the community, but when theft thrust its hand into a bag of yellow dust aroused indignation sprang from its lair, and the culprit was strung up with little ceremony and less mercy. But all this is over, and the inhabitants of the Black Hills are building for themselves happy homes and laying the foundations of a new State. Their future is assured, and certainly they have deserved success. They have learned that the struggle of life, difficult everywhere, is doubly so here. Work was hard, danger great, privation constant. Verily, the denizen of the border is a cheerful animal. However often the smiles of Fortune may be wrinkled to frowns, he does not lose heart, and faith in his luck never deserts him.

Whilst we were lying in camp during the late summer days of '78 near Lake de Smet, I was ordered to proceed with my company to the Custer battle-field, distant one hundred and twenty miles. With me were Governor Hoyt, of Wyoming, and Lieutenants Macomb, Paddock, and Cherry, of the Fifth Cavalry. The two last named were with me more recently at Milk River, Colorado, when both won their spurs, and Mr. Paddock received a painful wound. Ten miles from the lake we crossed the Piney, where a dismantled post and a crowded little cemetery revived our recollections of the Phil Kearney massacre, which occurred near here in 1867. The scene of the massacre is several miles beyond the fort, and is marked by a large bowlder called "Memorial Rock." From this spot the prospect is extended and grand. The uplands here and for the next fifty miles are very beautiful, and the luxuriance of the grass strikes one with amazement. We rode through miles of rich verdure, as fine a view as the Blue Ridge or Nantahela afford on our left, whilst to the right the rolling plains were spread out like the billows of the sea till lost in the infinite azure of the horizon. The mountain outline is cut up by canyons, from which flow fine streams; on the steep declivities ferns, moss, lichens, the laurel, and holly grow, and the cedar, pine, and juniper flourish; wild-flowers are everywhere. In many of the little nooks formed by the foot-hills as they break off into the valleys are patches where the crocus, flaming poppies, wild verbenas, and daisies, growing in profusion, form pictures of blended color indescribably beautiful. Wherever wagon-wheels have cut through the sod or a cavalry column has marched sunflowers have sprung up, and long parallel lines of blossoms turning in yellow glory to their god mark many a trail across the plains. On Tongue River, where we made one of our camps, we saw tiger-lilies nodding over the crystal waters, and the trailing arbutus, wild hop, and smoke-plant hanging in festoons from the trees, and making shadowy silhouettes on the sunlit sward.

No region I have seen compares with this as a stock country. The water is excellent; the streams, veritable mountain torrents, are too rapid to freeze; the shelter afforded by the timber and hills moderates

the rigors of winter, and the grass cures on the stalk, furnishing abundant feed the entire year. Within ten miles along the De-ja-a-gie could be utilized water-power sufficient to grind the wheat of half the continent and set a million spindles humming.

After leaving Tongue River our course turned sharply to the right and lay over the rolling prairie, the dim outline of the great valley of the Big Horn to the left, on the right the Rosebud Mountains, among whose foot-hills General Crook had his famous battle with the Sioux on the 17th of June, 1876. Twenty miles out one realizes that he is leaving the Big Horn Range. The landscape is toned down; the mountains assume the soft blue hue that distance lends; the dark forests are lost to recognition; the valleys expand into broad reaches of meadow-land, and Cloud Peak, of which occasional glimpses are had from high points on the rolling road, looks like the white wing of a water-fowl seen from the deck of a ship as it pitches among the billows of the sea.

Following the Little Big Horn down eight miles from the point where we first reached it, our road left the valley and passed over a high plateau, from which we obtained, at ten o'clock of the morning of August 22, our first view of the Custer battle-field. There indeed was revealed in bold relief, with its outlines of solemn hills, tangled copse, and murmuring stream, that dramatic spot whose legends, as they go sounding down the grooves of time, the themes of music, pen, and brush, will commemorate the monumental tragedy of our centennial year. We found a pretty grove in which to pitch our tents, and proceeded at once to make preparations for a survey of the battle-field. Whilst thus engaged our attention was attracted by an exclamation from Governor Hoyt, and looking up we witnessed a spectacle which, had these been the days of augurs and soothsayers, would have caused our hasty departure. A vast ring encircled the sun, its blended colors of crimson, purple, and yellow forming a halo of unsurpassed splendor, as if the fates, lending themselves to the inspiration of the place, wished to make contemporaneous with our visit the production of one among nature's most superb phenomena.

Riding up the bluffs at the southern extremity of the field, we found ourselves surrounded by evidences of Reno's hard fight.

Following the ridge northward an elevation is attained overlooking the river and valley, as well as the fatal field to the north where Custer and his brave comrades looked their last on the sun. The story of the battle has been often told and has no place here. The lips of brave men, participants in the bloody scenes of that fair summer day, have told of the hopes of the morning when first the village was descried and the news went like wild-fire down the sets of fours, until the sluggards—if any there were—felt eager for the fray. Of how Custer and his comrades died we know next to nothing. None of them survived the struggle, and only from Indian accounts and the

clews afforded by the battle-field itself can we hope as time passes to understand much now shrouded in mystery. One by one the red drops will fall into their appropriate places, forming a dreadful mosaic whereon, though they be not clearly revealed, will be shadowed forth the awful incidents of the bloodiest day in the history of Ac-ca-ra-ba.[1]

Six or seven hours were spent in looking over the field and visiting points of special interest. The trails by which the troops had advanced to the attack, as well as those leading up the heights accessible only to ponies, were still traceable. The cause of the great disaster was apparent at a glance. A small body of troops, the men tired, the horses jaded, was divided into two columns to attack, at points five miles distant from each other by the shortest practicable route, a greatly superior force of Indians occupying a strong central position, from which they were enabled to radiate and mass anywhere on the perimeter of the semicircle made by the hills, thus making easy the overthrow of either party before the other could be brought to its support.

From the high hill I have referred to could be seen the lines along which the skirmishers deployed, marked by rude mounds of earth, and at the northern extremity of the battle-ground a small hillock, with thirty or more graves and the bones of as many horses grouped within a small circumference, indicating the spot where the last stand was. Here on Custer's Knoll, as the hill is called, a rude shaft has been erected to mark the place where the "Yellow Hair" fell. Standing upon the highest point between Reno's Bluff and Custer's Knoll and looking to the southwest across the magnificent panorama nature has spread out like a scroll, one's thoughts reverted to the shadowy past, and contrasted the quietude of the moment with the once busy scenes of Indian life.

Two hundred feet below is a wide meadow, through which courses the Little Big Horn, rival to the far-famed Serpentine in lines of grace, its waters flashing in the sunlight and washing the sands with a gentle swirl, whilst along its banks and those of the dozen tiny streams coming down from the mystery of the hills were fringes of trees, whose verdure lent an indescribable charm to a landscape diversified and altogether beautiful. The mind went trooping back along the vanished years and peopled the solitude with the savage denizens, who, gathering here as the summers rolled around, saw the young braves undergo the ordeals of the Sun Dance with as keen a zest as the Roman populace watched the bloody sports of the arena.

Nightfall found us on Reno's Hill, and as we slowly descended into the valley the chill of a great cloud was creeping across the plain and the gloom deepening all around us, except in the western sky, which, ablaze with lurid color, looked as if all the blood shed on this field was flaming there.

[1] Ac-ca-ra-ba, Crow for Land of Massacres.

Next morning the heavens were portentous, and before we had marched many miles on our return rain began to fall, and continued until the following afternoon. As we left the valley of the Little Big Horn the sun began to shine through the clouds, and vast masses of vapor lifting their dewy skirts from the lowlands wreathed themselves into fantastic shapes, affording glimpses of the mountains covered with the first flurries of snow; for within a few days the seasons had changed. The languid summer was gone and autumn was at hand; the mornings sharp, frosty, the noons rejoicing in the golden glory of the sunshine, the night skies flushing with auroral splendors as the cheek of beauty blushes at the whisperings of love. Cottonwood, birch, and maple were in "the sere and yellow leaf;" the sumach burned a deeper red, and the valley of the De-ja-a-gie was brimming over with colors and perfume as a goblet with wine.

Our summer in Arcadian solitudes was over. But solitudes no longer are they. Already the woodman's axe is heard in the forest and the husbandman's plow is upturning the virgin soil. Beautiful and productive, this region will attract a large population abreast with the foremost spirit of the age; even now the throbbings of the great heart of civilization reach it.

J. S. PAYNE,
Captain Fifth U. S. Cavalry.

THE CAREER OF COMMANDER W. B. CUSHING, U.S.N.

WILLIAM B. CUSHING was born in Delafield, Wisconsin, November 4, 1842; entered the Naval Academy at Annapolis, Maryland, September 25, 1857; resigned March 23, 1861, and as soon as possible thereafter entered the naval service afloat as an acting master's mate. His disposition and temperament would not permit him to remain at a naval school in time of war; he would not have been able to give a single thought to theoretical study.

We find that on the following October he was restored to his rank as midshipman. March 27 he was detached from the "Cambridge" sick, and granted one month's leave. The following May he was ordered to the "Minnesota," and was promoted to the rank of lieutenant from the 16th of July, with a large number of young officers, made necessary to supply the demands of the service growing out of the civil war.

Henceforth, for a period of nearly three years, his career was singularly conspicuous in deeds of daring, in a service where a lack of gallantry would have brought disgrace. It is plain, therefore, that it was the sagacity of his plans and his boldness in carrying them out that distinguished him.

At the close of the war he was barely twenty-two and a half years of age, rather slightly built, about five feet ten inches in height, and boyish-looking; had a large gray eye, prominent aquiline and well-formed nose, yellowish hair worn long, and, withal, a rather grave expression of countenance; when speaking, his face would light up with a bright and somewhat playful smile. The youth portraits of the poet Schiller seemed not unlike him as I remember him at the close of the war; a comrade likened his springy, elastic step, high cheek-bones, and general physiognomy to that of an Indian. The first impression of a stranger who heard him speak, either of what he had done or hoped to do, would be that he was a boaster, but with those who knew him best there was no such idea; his form of speech was a mere expression frankly uttered of what he had done or what he intended to do.

When in command of a small steamer engaged in blockading, he

sought opportunities of visiting the inland waters of the enemy in his boats, usually after night, and would sometimes lie concealed during the following day, always having in view some definite object, whether commensurate with the risks involved or otherwise. At other times in narrow waters, in the vessel he commanded, he would find himself fiercely engaged with the field-batteries of the enemy.

In a magazine article it will only be possible to give briefly a few characteristic sketches of his career, and to endeavor to draw logical deductions therefrom.

When blockading the coast near New Topsail Inlet he discovered a schooner within, and made a reconnoissance in his boats, but soon found himself under fire of the enemy's field-pieces and small-arms, in the hands of a considerable force guarding the inlet. He of course retired, but determined to destroy the schooner, lying some miles from the guarded point of entrance.

Persons familiar with inlets in marshy countries know that usually they are very tortuous, and often lead for miles along or near sand-spits which separate the channels from the ocean. Such was the configuration of New Topsail Inlet. Late in the evening, August 22, 1863, Lieutenant Cushing anchored the "Shokokon" close to the beach abreast the schooner, and several miles distant from the entrance to the inlet. He sent two boats with crews on shore, the larger one to act as a support. The men hauled the smaller boat across the sand beach and launched it in the stream. Acting Ensign James C. Coney was sent in this boat with a force of six men to destroy the schooner. They pulled along until within a short distance from the vessel of the enemy, where they landed and sent a man to reconnoitre, who brought the information that some twenty men with a small piece of artillery were guarding the vessel. A charge was made, the enemy routed, ten prisoners, one howitzer, and eighteen small-arms captured; the schooner and adjacent salt-works were destroyed, and the expedition rejoined the vessel without loss.

In the winter of 1864, when blockading the Cape Fear River, Cushing determined to pay a visit to Smithville in a boat having a crew of but six men. In entering the river he had to pass Fort Caswell, mounting heavy guns, and at Smithville, his destined point, two miles above, he knew there was a battery of five guns and a considerable garrison. He landed one hundred yards above the battery, came into the village, and across the street into General Hebert's house, a large building with a piazza; the hour was about 11 P.M. Major Hardeman and Captain Kelly, of the general's staff, were downstairs and about retiring, when the former hearing footsteps on the piazza and supposing his servant was there, threw up a window, when a navy pistol was thrust in his face and a demand made to surrender. He instantly pushed the pistol aside and escaped through a back-door,

calling upon Kelly, his companion, to follow, as the enemy were upon them. The latter failed to comprehend, and was taken prisoner and carried off by Cushing, who embarked at once, knowing that an alarm would immediately be given. In speaking of this occurrence, Cushing said that it was a beautiful, bright moonlight night, and that he counted upon a lack of vigilance of the enemy from that fact. The soldiers were quartered in the immediate vicinity where his prisoner was captured.

To most officers, making prisoners of General Hebert and one or two of his staff would not seem a sufficient compensation for the risks encountered. There was no special reason for desiring the capture of this officer or his staff. In all probability Cushing's object was frustrated only by the absence of General Hebert, who spent the night in Wilmington. The audacity of the act secured exemption from defeat or capture in executing it.

One of our army officers who was at the capture of Newbern mentioned to me that Cushing in command of navy howitzers passed along with his sailors, aided by soldiers, dragging the pieces. In landing in the marsh Cushing had lost his shoes and in the bushes his hat. Pressing on bareheaded and barefooted, he encountered the servant of Captain Johnson, of the army, who had a pair of spare boots slung over his shoulder. Cushing asked the servant the name of the owner of the boots, and said, "Tell the captain that Lieutenant Cushing, of the navy, was barefooted and has borrowed them for the day," and in spite of the remonstrances of the servant put the boots on in haste and pursued his way.

In the destruction of the plated ram "Albemarle" we see Cushing in a true heroic light. The press correspondents had for a month or more apprised the public and the enemy that Cushing was on his way from the North with a torpedo-boat to blow up the "Albemarle." No method could have been taken that would seem more efficacious to render her destruction impossible. The enemy was apprised of the arrival of the torpedo-boat in the adjacent waters; the "Albemarle" was secured to a wharf at Plymouth; a cordon of logs was placed around her at a distance of about thirty feet; a company of soldiers with small-arms and howitzers were on the wharf to defend her, and her crew on board to make use of her guns. The enemy was vigilant and Cushing's approach was discovered. Yet we find him under a full head of steam standing forward undismayed, amidst a shower of bullets and the fire from the howitzers stationed on the wharf, pushing his way in over the cordon of logs, lowering his torpedo and blowing the vessel up at the very instant when a shell from one of the heavy guns of the "Albemarle" struck the torpedo-boat and she went down swamped by the column of water and spray, which rose high in the air when the torpedo exploded. The report of Cushing is so graphic and characteristic that it is given entire:

ALBEMARLE SOUND, N. C.,
October 30, 1864.

SIR,—I have the honor to report that the rebel ironclad "Albemarle" is at the bottom of the Roanoke River. On the night of the 27th, having prepared my steam-launch, I proceeded up towards Plymouth with thirteen officers and men, partly volunteers from the squadron. The distance from the mouth of the river to the ram was about eight miles, the stream averaging in width some two hundred yards, and lined with the enemy's pickets. A mile below the town was the wreck of the "Southfield," surrounded by some schooners, and it was understood that a gun was mounted there to command the bend. I therefore took one of the "Shamrock's" cutters in tow, with orders to cast off and board at that point, if we were hailed. Our boat succeeded in passing the pickets, and even the "Southfield" within twenty yards, without discovery, and we were not hailed until by the look-outs on the ram. The cutter was then cast off and ordered below, while we made for our enemy under a full head of steam. The rebels sprung their rattle, rang the bell, and commenced firing, at the same time repeating their hail and seeming much confused.

The light of a fire, ashore, showed me the ironclad made fast to the wharf, with a pen of logs around her, about thirty feet from her side.

Passing her closely, we made a complete circle so as to strike her fairly, and went into her bows-on. By this time the enemy's fire was very severe, but a dose of canister at short range served to moderate their zeal and disturb their aim. Paymaster Swan, of the "Otsego," was wounded near me, but how many more I know not. Three bullets struck my clothing, and the air seemed full of them. In a moment we had struck the logs just abreast of the quarter port, breasting them in some feet, and our bows resting on them. The torpedo-boom was then lowered, and by a vigorous pull I succeeded in diving the torpedo under the overhang and exploding it, at the same time that the "Albemarle's" gun was fired. A shot seemed to go crashing through my boat, and a dense mass of water rushed in from the torpedo, filling the launch and completely disabling her.

The enemy then continued his fire at fifteen feet range, and demanded our surrender, which I twice refused, ordering the men to save themselves, and, removing my own coat and shoes, springing into the river, I swam with others into the middle of the stream, the rebels failing to hit us. The most of our party were captured, some were drowned, and only one escaped besides myself, and he in another direction. Acting Master's Mate Woodman, of the "Commodore Hull," I met in the water half a mile below the town, and assisted him as best I could, but failed to get him ashore.

Completely exhausted, I managed to reach the shore, but was too weak to crawl out of the water until just at daylight, when I managed to creep into the swamp, close to the fort. While hiding a few feet from the path two of the "Albemarle's" officers passed, and I judged from their conversation that the ship was destroyed.

Some hours' traveling in the swamp served to bring me out well below the town, when I sent a negro in to gain information, and found that the ram was truly sunk. Proceeding through another swamp, I came to a creek, and captured a skiff belonging to a picket of the enemy, and with this, by eleven o'clock the next night, had made my way out to the "Valley City."

Acting Master's Mate William L. Howarth, of the "Monticello," showed, as usual, conspicuous bravery. He is the same officer who has been with me twice in Wilmington harbor. I trust he may be promoted when exchanged, as well as Acting Third Assistant Engineer Stotesbury, who, being for the first time under fire, handled his engine promptly and with coolness.

All the officers and men behaved in the most gallant manner. I will furnish their names to the Department as soon as they can be procured. The cutter of the "Shamrock" boarded the "Southfield," but found no gun. Four prisoners were taken there. The ram is now completely submerged, and the enemy have sunk

three schooners in the river to obstruct the passage of our ships. I desire to call the attention of the admiral and Department to the spirit manifested by the sailors on the ships in these sounds. But few men were wanted, but all hands were eager to go into the action, many offering their chosen shipmates a month's pay to resign in their favor.

I am, sir, very respectfully,
Your obedient servant,

REAR-ADMIRAL D. D. PORTER,
Commanding N. A. Squadron.

W. B. CUSHING,
Lieutenant U.S.N.

The name of the man who escaped is William Hoftman, seaman on the "Chickapee." He did his duty well, and deserves a medal of honor.

Respectfully,
W. B. CUSHING, U.S.N.

For this act of heroism Cushing was advanced to the grade of lieutenant-commander.

His entire career was filled with daring, cleverly planned and admirably executed; hence his unvarying success in what he undertook; but his character was not one that would admit of imitation; such men are never mere imitators, and attempts by those of inferior qualities in such respects would end in their capture or death.

Notwithstanding his extraordinary qualities, he perhaps lacked that attention to the practical and laborious details of his profession without which no officer can attain eminence, or usefulness even, in the higher grades. His ability to comprehend was undoubtedly of a high order, but possibly a deficient training when a mere youth left him apparently averse to acquiring the practical details of his profession.

The fact is Cushing had such pre-eminent qualities, that those who appreciated him felt a certain chagrin or disappointment that he did not seem to possess those ordinary qualities through which he could acquire the knowledge necessary to extraordinary success as the leader of large forces.

Cushing's life in war was active and heroic in the extreme; in peace he seemed to suffer as it were from inanity, or more properly speaking, from the apparent lack or absence of a strong purpose.

After the close of the war he was for some two years the executive officer of the "Lancaster," a position which required close attention and study to fulfill its duties in the best manner.

Afterwards he served three years in command of the "Maumee," on the Asiatic station. He was promoted in regular order of vacancies to commander January 31, 1872, and soon after was ordered to the command of the "Wyoming," on the home station, and was relieved at the end of a year, the vessel being put out of commission.

In the spring of 1874 he was ordered to the Washington Navy-Yard, and the following August he was detached at his request. He then seemed in impaired health, and expressed a desire to go South;

after the lapse of a few days he showed symptoms of insanity and was removed to the Government Hospital, where he died December 17, 1874, at the age of thirty-two years and thirteen days.

His becoming insane was a great regret and surprise to his many friends and admirers in and out of the naval service; it was, however, a consolation for them to know that it was not the result of bad habits or of causes within his control. His misfortune, and that of the naval service to which he belonged, was seemingly a lack of rigid early training, necessary to healthful thought in ordinary times, and to a continued development of those points in naval education which are so useful in peace, and so essential to success in the higher grades, whatever nature may have done to fit the man for action.

There are few Cushings in the histories of navies; they can have no successful imitators; they pass away as it were before they reach their destined goal, regretted and admired.

DANIEL AMMEN.

CAVALRY.

I.

"Mount, chevaliers! To arms!"

SHAKESPEARE.

"Il y a des choses que tout le monde dit, parce qu'elles ont été dites une fois."

MONTESQUIEU.

IN olden times, when war was almost the sole business of man, the composition of armies was generally tripartite,—"Horse, Foot, and Dragoons." The Artillery was a separate establishment, distinct and apart down to the time of the "Thirty Years' War"; and anything like a regular recognized engineer department has a much later date, its midwives being Louvois, Vauban, and Cohorn.

This article has only to do with "Horse" and "Dragoons," the latter, in many services and at different periods, little more than Mounted Infantry, although, from time to time, there were commanders who recognized the important services which might be rendered by Mounted Infantry, proper. Many military experts would

"Disfurnish us of all our cavaliers,"

as incompatible with breech-loading, long-range guns and smaller arms of precision, oblivious of the fact that cavalry is "the arm of the moment," and that there never can be a period when a decisive instant may not arrive for the employment of

"Those culled and choice-drawn cavaliers,"

who have so often borne off victory and vast results with the points of their spurs and at the points of their sabres.

"Then in a moment, fortune shall cull forth
Out of one side her happy minion,
To whom in favor she shall give the day,
And kiss him with a glorious victory."

It has almost invariably been asserted that the use of chariots in war preceded the employment of cavalry. Even at the risk of flying

in the face of scientists and experts, it seems neither a bold nor wild contradiction to assert that the mounting of armed men on horses preceded the placing of them in vehicles drawn by these quadrupeds.

Hepworth Dixon, in his "British Cyprus" (pages 115–116), makes the following sensible remarks: "Driving [chariots] is an after-stage of growth. A pastoral people never drives. The nearer men remain to the nomadic state the less they are disposed to run on wheels. . . . A tire is science; an axle-tree a sign of growth. The rim of a wheel is no less great an invention than the bow of a boat. Wheels multiply the powers of man. A horse may bear a single rider; harnessed to a cart, that horse may draw ten or twelve men."

Ergo, cavalry—horseback riding—preceded chariots,—driving.

Let us see how recent researches bear out the opinion. The Aryans were the progenitors of every race to whom mankind owes steps of progress. While still in their nomad or semi-agricultural condition "they had domesticated the cow, the horse, the sheep, and the dog." Four thousand years of authentic history has not added one single domestic animal or fowl to those we find ministering to the comfort and pleasure of humanity, according to the remotest reliable records. Consequently, as the Aryans owned the horse, and had domesticated him when they commenced their migrations, even before they overran and occupied India, it is contrary to common sense to believe for a moment that they did not use this animal on first principles,—that they did not bestride him and ride him to battle before they harnessed and drove him.

The "Dispersion" took place 2247 B.C.; and two hundred and fifty years later these Aryans were on their paths of conquest. Already 2218 B.C. Nimrod "began to be a mighty one in the earth, a mighty hunter" of beasts and subduer of men. It is very unlikely that Nimrod, the founder of the first monarchy (Chaldean[1]), could have been so renowned a hunter without horsemen, and Uruk so vast a conqueror without cavalry. If they had cavalry, this would carry its history back to the earliest records of the world.

China, like India, was invaded by the Aryans or Japhetites 2000 B.C.,—that is, by Caucasians who had flocks and herds, and droves of cattle and horses, and iron,—*ayas* (Gothic, *ais*). They knew how to work in metal. They forged iron and steel

> "To a keen edge and made it bright for war."

A race so constituted, if they owned horses (and recent discoveries prove that they did), must have ridden them; and some of their fighting-men must have served on horseback as more or less regular cavalry. With the genius in command which displays itself in all ages, the value of organization and discipline, and the improvement of armament,

[1] Capitals: 1, Ur; 2, Nissur or Nipur; 3, finally, Babel or Babylon.

develop themselves as if by magic. These facts have been demonstrated among certain nations even in Africa (this does not involve a claim that they were negroes), whose chieftains evinced the ability to apprehend great truths, to apply them practically, and to employ means which, on other theatres, would have raised them even to the grade of the class which comprises Hannibal and Frederick, the only two well-known peers of Napoleon, who originated, adapted, and improved, as well as employed, all that the latter did.

Common observation teaches that even the rudest tribes that possess horses use them primarily for riding. When they apply them to traction, even our Indians—in the light of the examples of the whites—display very little ingenuity. To conceive that the use of chariots drawn by horses for war-purposes preceded mounted troops is inconsistent with common sense. Writers, styled scientific, have accumulated evidence to prove the contrary. Nevertheless, this assertion cannot be correct, because horsemanship requires no knowledge of the mechanical arts, whereas the construction of chariots, the adjustment of harness, and the handling of teams argue a comparatively advanced stage of civilization.

There is only one weak argument furnished for the use of horses before chariots prior to their employment for cavalry, which is referred to by Arnold (History of Rome, 205–6), viz., that the horses of antiquity were too small to carry mail-clad riders. This is fallacious, for the Cataphracti of Mithridates must have weighed in their full panoply as much as the knights in the so-styled "age of chivalry." Nor did the Carthaginian "complete Cuirassiers" of Hannibal, nearly two centuries previous, with their long lances and long cutting sabres, require less powerful mounts. These were the types of Marmont's proposed Cuirassier-Lancers, now or recently a prominent feature among the Russian heaviest Line cavalry.

Is it not almost absurd to suppose that whoever caught or bred a horse undertook to drive before he mounted it? Look at farmers' sons! Before they are out of long clothes the most adventurous commence by riding pigs, then cows or oxen, or even a quiet bull (an example of the latter is well known to the writer), and finally the docile colts, as soon as the loins of the last are strong enough to bear the weight of a lad bold and athletic enough to manage them. Breaking horses to harness is a long after-thought to any wild race; and, as previously observed, harness and vehicles indicate an advanced stage of mechanical development. Witness the primeval bullock-cart presented in 1876 to the United States government by the King of Siam, and exhibited in the Federal building at the Centennial Exhibition. Contrasted with the elaborate saddles, bridles, and equipments for horses and elephants, it resembles the efforts of a semi-savage as compared with those of an advanced civilization.

How many barbarous tribes have been discovered who are expert horsemen without the slightest knowledge of vehicular transportation! For instance, the Abiponians, of Paraguay, and other tribes occupying the most southern portions of South America, constitute a nation of horsemen. Some of these have been well known for over two hundred and fifty years, and to this day their only mode of traveling is in the saddle. To ride depends simply on courage, force, and address. A vehicle requires an extensive acquaintance with mechanics of an advanced character. The best light cavalry of all known time were the Numidians of Hannibal, who used neither saddle nor bridle; whereas chariots presuppose harness-makers, carriage-manufacturers, workers in leather and the metals of no mean ability, besides a long process for breaking in the horses after everything necessary had been previously prepared by art.

Almost every writer who has undertaken to treat of mounted troops has been content to follow stereotyped authorities, without attempting to investigate for himself.

Bardin (ii. 1088) says the term *cavalry* is derived from the *Teuto*, or Franco-Teuton (Theotiscan),—*kabal*, horse, transmitted through the base, or barbarous Latin, into a word almost identical; and Henry Estienne (*ibid.*) avers that the title *cavalry* does not date farther back than his time (1579). The truth of this last assertion is very doubtful.

The term formerly applied to military horsemen by the Germans was "Reiterei." This is much preferable to cavalry, because it comprehends all kinds of armed men who, as a rule or exceptionally, fight in or from the saddle.

1. Cavalry proper, who always fight on horseback.

2. Dragoons, a hybrid organization, who *are* called upon to perform the duties both of the preceding and of infantry.

3. Mounted Riflemen, who *may* be called upon to discharge the services of cavalry proper, but are better fitted for foot service, and, as a rule, are expected to do so.

4. Mounted Infantry, who simply use horses as a means of expeditious transport.

The arms of the first should be the lance, the sabre, or the broadsword. The lance has been styled "the queen of arms for cavalry"; but to use it properly a soldier must be, so to speak, "to the manner born." With the Poles of former days, also the original Cossacks, the lance was a national or natural weapon. Careful drill and practice has almost made it so with the Prussian Hulans. These latter, in the great Prusso-Austrian war of 1866, beat with this weapon every kind of Austrian mounted troops opposed to them who were not furnished with spears.

The arms of the second are a short musket with an ordinary

bayonet, or a carbine with a substitute for a bayonet, both fabricated for this particular service, and a cavalry sword or sabre.

Both the first two classes carry pistols.

For the third class the weapon was the most approved rifle, side-arms constituting mere adjuncts.

The fourth class had infantry arms and accoutrements proper. Such troops are almost invariably the result of accidents or improvisation.

With writers following in the rut, it has been the custom to ascribe a comparatively recent date for the organization of cavalry. They certainly do not place it farther back than 500 B.C. Bardin, one of the best authorities, on the other hand, admits that there is some probability that the Chinese had cavalry twenty-seven centuries B.C. He cites the Jesuit missionary, Joseph Amiot (1775–94), who brought back from China in 1782 not only representations of Cavalry proper, but designs of Orders of Battle, in which the Arm is unmistakably delineated as entirely distinct from Chariots. A plan in fact dating back to the twenty-eighth century B.C. is produced as absolute proof, showing the distribution of the different Arms in line of battle, among which cavalry are exhibited as conclusively present in force. No one pretends to carry chariots so far back as this,—*i.e.*, B.C. 2700–2800.[2]

That cavalry was in the field thus early is very likely, because there were religious wars in Asia and vast conflicts between comparatively civilized nations in the time of Abraham,—1993 or 2000–2153 B.C. This was the era of Semiramis, for whom it is claimed that she led "hordes of horsemen." The disciples of Zoroaster, who descended from the steppes of Central Asia,—the hive for thousands of years whence issued innumerable swarms of horsemen,—were already crusading against the "first great Asiatic monarchy" (whose capital was Babylon), twenty-two centuries B.C.; and these must have been mounted on horses to overcome the vast spaces they had to traverse.

Recent historical investigation has made the wonderful discovery that the Arabian peninsula between the Red Sea to the west and the Green Sea and Sea of Oman, or Persian Gulf, to the east was the seat of a civilization (Himyaric) whose actual dominion or political supervision embraced the farthest East Indian Archipelagoes and all the

[2] M. Lt.-Gen. Comte de la Roche-Aymon, in his monograph on Cavalry, quotes Diodorus as stating that in the tomb of Osymandias the history of the war carried on by this king of Egypt against the revolted populations of Bactriana, whose capital Balkh lies northwest of the Hindoo Koosh, is graven on stone. According to this inscription he led against them twenty thousand horses or horsemen. Osymandias preceded by twenty-five generations Sesostris, who lived two to three centuries before the siege of Troy. Behold then cavalry constituting a part of armies a few centuries after the deluge! All historians, says the author and a peer of France, whether sacred or profane, are unanimous in carrying back to Sesostris the employment in his armies of cavalry regularly organized,—cavalry independent of chariots constructed for war purposes,—between which the Scriptures draws the distinction very clearly, *i.e.*, according to the Vulgate, "*Hi in curribus, et hi in equis.*"

coasts and immediately adjacent territory westward and northward through the Herculean Gates, even to the shores of the Northern Atlantic, at a period prior to that ascribed in Biblical chronology to the reign of Nimrod. This is about the time ascribed to the invasion and conquest of Egypt by the *Hyk-sos*, or *Hyck-shos*, "Shepherd Kings." Analyzing, *Shos* signifies Arabian, and *Sus* a horse. Manetho, and in fact almost every other ancient writer, styles these *Hyk-sos* "Shepherds," whose heavy hand as conquerors made, as we learn from Genesis xlvi. 34, "every shepherd an abomination unto the Egyptians." Recent philological research considers these *Hyk-sos* to have been shepherds, or rather herdsmen, like the *Csikos* (Czikosses) of Hungary, who rear and use horses. Some suppose the *Hyk-sos* to have been the progenitors of the original Saracens. They resembled the nomad mounted tribes of Asia that more than once submerged Russia, and nearly overran Eastern and Middle Europe, in the same way that their probable ancestors conquered Egypt. It is likely that they were the types of the Mogul hordes of Attila, of Ghengis Khan, and Tamerlane. These *Hyk-sos* seem to have introduced the horse into Egypt, which was afterwards celebrated for its breed of these animals, as well as for its cavalry. It is true that this mention of "the admirable Egyptian cavalry" is first dwelt upon by Herodotus, about 450 B.C.; but an organization remarkable for its efficiency must have been the growth of a very long period, because in the kingdoms along the Nile a whole century witnessed very few changes, and was devoted to the building and adorning of a single temple, whose architecture and ornamentation was according to a stereotyped pattern, common to the earliest as well as the latest structures of this people. Cyrus the Elder organized, 550 B.C., a cavalry corps of ten thousand men, with tactics and a division into squadrons, which has not been much changed during the ensuing twenty-four hundred years.

Note here something very curious: *Hik-sos*, "shepherd kings," or "shepherd horsemen," is not so unlike *Csikos* (Hungarian), herdsmen (*Czikosseses*, plural: Brace?), and the Magyars are said to belong to the Mongol ethnological family. They both followed the same occupation, and in times past both were readily transmuted into admirable light-horse.

When Moses fled into Egypt and served Jethro as a shepherd, 1531–1665 B.C., he found there the Book of Job,—*not* the tradition, but the *Book* of Job,—who flourished in the preceding century. Hales assigns Job to 1337 B.C. In this book is to be found the finest description of the war-horse which has ever been drawn with a pen. It is such a word-picture as no one could have painted who had not seen a military charger so magnificent only amid the collisions of a cavalry conflict. M. Schels (1834) is of opinion that to the twentieth century B.C. must be assigned the career of Job; and that as he was of Uz, east of Pales-

tine, he very probably witnessed inroads of horsemen like the *Hik-sos*. A raid of three bands of Chaldeans, like the Bedouins of to-day, swept off his camels and slew their keepers (Job i. 17), while the Sabæans of Arabia-Felix "gobbled" his oxen and asses. Language has never surpassed Job's sublime conception of the war-horse. That he could not have intended a draught-horse is proven by the mention of the horse and his rider in the preceding verse. Homer and Virgil cannot approach the Hebrew, although there is one lofty line of the Latin poet in connection with the movements of cavalry:

"Quadrupedante putrem sonitu quatit ungula campum."

Conceding a higher antiquity to Job, Moses, the next Hebrew writer in order, presents frequent allusions to cavalry. Jacob (Genesis, xlix. 17), 1689 B.C., compares Dan to an adder "that biteth the horse heels, so that his rider shall fall backward," and alludes to horsemen. Miriam (Exodus xv. 21) triumphs over the Egyptian horses and their riders, overwhelmed in the catastrophe of Pharaoh, Rameses II. (perhaps Sesostris), the Great, 1491 B.C., and (*ibid.*, 19) there is the clearest distinction between draught and riding animals: "For the horse of Pharaoh went in with his chariots and with his horsemen into the sea." From this time forward there are repeated references to cavalry in the Old Testament. Samuel (1120 B.C.) tells the Jewish people that if they will have a king he will take their sons, some to be charioteers, some to be his horsemen (or cavalry), some to be his infantry, and some to serve in other military capacities. David, the author of a military organization similar to the Landwehr system of Prussia, had (1040 B.C.) a regiment of seven hundred horsemen, besides one hundred chariots; and Solomon (1014 B.C.), twelve thousand cavalry, besides chariots. There is no need of multiplying instances. Sufficient to add that with the Jews the horse became the symbol of war or of a campaign, and horsemanship the type of conquest. The curious reader is referred to McClintock and Strong's Biblical Cyclopædia, article "Horse," in which it is clearly shown that there is one word, *parash*, a horse for riding, and a totally different one, *rakab*, for a draught horse.

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Some of the most startling revelations of the present era are derived from the explorations along the Tigris and Euphrates. George Smith, in his "Assyrian Discoveries," etc., 1873–74 (New York, Scribner, Armstrong & Co., 1875), gives translations which prove the preceding conclusions beyond cavil. In many cases they do not antedate the Bible records; but criticism has thrown a great deal of doubt upon the exact period to which the Jewish annals can be attributed with any certainty; and concerning the Nilic tablets there are antagonisms which involve discrepancies of centuries, if not decades of centuries. Let us

take them up in the order mentioned. That the Assyrian cavalry was coeval with their first military organization is scarcely susceptible of doubt. This arm existed in the eighth century B.C., contemporary with Pekah, king of Israel, and Ahaz, king of Judah, 742 B.C. According to the palace slabs of Nimroud, deciphered by George Smith, there are repeated mentions of riding on horseback. Tiglath-Pileser, 743 B.C., in the record of his defeat of northern nations, says, "Sarduarri of Ararat against me revolted." "In the midst of the fighting Sarduarri rode on his mare and escaped." "Riding-horses in my army like sheep I distributed." Again, under date 738–37 B.C., horses, riding-horses, oxen and sheep, camels, are cited in connection with this war with Syria and the East. After certain Northern campaigns, the ninth fragment records, among other boasts, "horses, riding-horses, and asses I carried off." In Sennacherib's reign appears "in the vast forests and rugged ground on a horse I rode." This seems enough of testimony to prove the fact that the Assyrian warriors and their opponents were, as early as the eighth century B.C., habitually mounted on horses in war.

Transferring the attention—to repeat and emphasize—to the Old Testament, if any reliability can be placed on its chronology, there are two mentions of horsemen in the Pentateuch: at Genesis xlix. 17—1689 B.C.—Dan is compared to an adder, "that biteth the horse heels, so that his rider shall fall backward;" and at Exodus xv. 19—1491 B.C.—both the horsemen and chariots of Pharaoh are mentioned; and at xv. 21, Miriam rejoices that "the horse and his rider hath he thrown into the sea."

One of the best critical works on the Old Testament calls Zimri (the antitype of Sardanapalus, Assurbani-pal, 688 B.C.), a usurper in Israel (929 B.C.), "General of Cavalry" to king Baasha, whom he slew. The celebrated Lange says that the Hebrew word generally translated "chariots" is now, under better lights, as a rule, interpreted "riding,"—*i.e.*, horses, as found on the Assyrian tablets. This view corroborates the correctness of the office held by Zimri and duties discharged by him, viz., the command of troops mounted on horseback,—not riders in chariots.

This brings us next in order to the consideration of Egyptian antiquities. Chabas, in his labored but very interesting work (Paris-Chalons, 1872), presents a fac-simile of an aide-de-camp on horseback galloping off to carry the orders of his king. He has a great deal to say about the horse and cavalry in Egypt, but space does not permit the valuable citations. Lord Lindsay, in his "Letters on Egypt" (i. 132, 133, etc.), refers to the sculptures and paintings on the Memnonium, which reminded him of the glowing war-imagery of the prophets, wherein "the horseman"—the horse and his rider—"lifteth up the flame of the sword, and the lightning of the spear," in the reign of Sesostris, or Rameses II.,—fourteenth century B.C. "What a people!"

Lindsay exclaims; "willing slaves to the vilest superstitions, bondsmen to form and circumstance, adepts in every mechanical art that can add luxury or comfort to human existence,—yet triumphing over the very Scythians;" yes, over the bravest and most warlike nation of the then known world. "What the age of Antar was to the Saracens, of Camillus to the Romans, of Achilles to the Greeks, of Joshua to the Jews, of Rustum to the Persians, that of Sesostris (or Ramses or Rameses II., 1322 B.C.) was to the Egyptians."

To continue this line of argument, citing authorities as it proceeds, long before any civilizations of which we have authentic accounts, a civilization did exist which was almost obsolete when Nimrod—"mighty hunter" of beasts and men—established his kingdom or empire. This Himiaric development, already referred to, had its centre in Arabia. This country, even now, is not a complete barren waste, as is generally supposed. Then it was extremely populous and highly cultivated through irrigation. This Arabia of the remotest predecessors of Balkis, Queen of Sheba, has been the very home of the finest breed of horses in the world since anything has been known of it. To imagine that this peninsula, once the centre of an empire rivaling the Roman in extent, whence swarms overflowed to subdue Egypt, and again, after Mahomet, to effect conquests which equaled, if they did not surpass, those of their prehistoric progenitors,—to imagine this power as destitute of mounted troops to carry on wars to such far-distant points, is to entertain an absurdity.

Even at the risk of tiring the reader, according to Bailly, prior to this Himyaric civilization, there was another in Central Asia, around Merv, or Meru, to which the Russian advance is now tending. There Balkh—still a city amid past ruins of a greater one—is recognized as yet by the title of "Mother of Cities,"—the ancient Bactra. This region was the womb of all the Aryan races, the exhaustless fount of all the white stems whose language can be traced back to the Sanscrit. The original population of this elevated steppe was the germ of a succession of waves of men that swept over the whole Asiatic continent, the larger portion of the European, and penetrated—how far into the African is yet to be discovered! To believe that these Aryans, the precursors of the Scythian—nations of mounted warriors or robbers—who, thousands of years afterwards, spurred against the Medes and Persians when the latter were at the summit of their power, took and slaughtered their great Cyrus, and nearly swarmed them out; to conceive that these types of the Saracens, compelled to operate over the vast plains of Asia, did not maintain armies of horsemen is incompatible with all analogies. A great portion of their own country was cold and mountainous, where camels have never been generally acclimated, and where the laden "ship of the desert" splits his foot, or rather tears his toes asunder, attempting to clamber over the wet and frosty rocks. Never-

theless, such a region is the home of the Circassians, who possess one of the finest breeds of horses in the world, and who are perfect experts as military riders. Whether these primitive horsemen were Cavalry proper,—who, like the Calmucks, waddled and wobbled when, dismounted, they attempted to walk,—or Mounted Infantry is open to argument. All that is known to a certainty is this: that among the Aryans, who were "the Romans of Asia," there were cavalry proper at a very early date, of "scarcely less importance" as a military arm "in their wars" than chariots. That these cavalry were at first mounted archers is unquestionable; and in the time of Sargon (eighth century B.C.) "the chariot comes to be almost confined to the king, while horsemen are frequent in the battle scenes." These cavalry were horse-archers; "the chief weapon of the cavalry at this time is the bow; sword and shield indeed are worn, but in no instance do we see them used." Holofernes, General of Nebuchadnezzar (seventh to eighth century B.C.), had "twelve thousand archers on horseback" in his army. Military horsemen are alluded to in the remotest chronicles without any evidence that they were novelties. If they were novelties, it is fair to suppose they would have received more particular mention.

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The preference of war-making monarchs of antiquity and military leaders in favor of chariots over horsemen would be positive evidence of a deficiency of the intelligence proper to their profession, were it not fair to suppose that the predilection evinced for chariots was founded on the undeniable fact that the masses were (and are still) more often affected by an ideal than a real danger. In the same way that ancient troops derived confidence from elephants and chariots, just so modern troops, especially new levies, are affected in the same way by the sound and presence of artillery. For general war it is impossible to believe that chariots, feebly constructed as they were, operating on bad roads, or in rough countries intersected by few or no roads, could have effected much. They were like the make-believe elephants of Crœsus; that is, travestied camels, disguised to give confidence to an army of inferior *personnel*, drawn up to encounter veterans. The masked camels, or false elephants, were disposed of in a trice, and were of as little real use as chariots in any of the great battles which decided the fate of the world at the period when they were chiefly employed. On the other hand, Cyrus, who was a military genius in his way, in the battle of Thymbra, was successful against Crœsus through his knowledge of the fact that the Lydian horses would not meet camels. Thus the cavalry of Crœsus were thrown into disorder by the charge upon them of animals the simple odor of which was disgusting in the extreme to them. Such is the story, and it is just as credible as that chariots preceded cavalry or troops mounted on horseback.

Among the cavalry of the successive conquering monarchies of

antiquity each, except the Roman proper, seems to have been the most celebrated in turn. The same has been the case in mediæval and modern times, with this exception: that nations to whom the saddle was an almost natural seat have always produced the very best light cavalry. A discipline of iron and the possession of horses has sometimes converted inferior natural horsemen into very efficient mounted troops for the time. For instance: the Bulgars in the ninth century possessed an excellent mounted force. Why? We are informed that it was "the Bulgarian custom, on the eve of battle, to subject the horse and accoutrements of every soldier to a searching inspection; if in any case they were found to fall below the appointed standard of efficiency, the owner was unhesitatingly put to death."[3]

Judging from analogy, any temporary superiority was doubtless owing to the soldierly instinct and military force of the reigning sovereign, the commander of his army, or the chief of the cavalry arm. Although many centuries B.C. the Egyptian cavalry was the most celebrated, nevertheless the Bible teems with magnificent allusions to the Assyrian.

Paxton (Edinburgh, 1819), in a careful, scholarly treatise on the Natural History of the East, devotes an exhaustive chapter to the history of ancient beasts of transport or burden, but especially the horse. He describes the Eastern races generally as not only strong, but swift and fierce, especially the Egyptian, claiming that at the time of the Exodus (1491–1648 B.C.) "the cavalry of Pharaoh was numerous and completely trained to war when the people of Israel were delivered from his yoke." (Illustrations of Scripture, i. 421, etc.)

It is easy to believe that in those days of the degradation of the poorer classes, the moral effect of an enterprising cavalry upon an almost unarmed or inefficiently equipped infantry must have been tremendous, utterly irresistible; and it was not until after Preston Pans, where the British dragoons behaved so deplorably, that the Scottish Highlanders could be brought to face regular mounted troops. The same was the case with all the Indian tribes east of the Mississippi. And yet the best of cavalry has always been comparatively impotent against a brave infantry properly organized and armed. The French and Scottish chivalry never accomplished anything against the English archers, to whom are due those astounding victories which illustrate the wars of England against France and Scotland. The French knights were sacrificed just as Napoleon's famous cuirassiers were wasted against the British squares at Waterloo, or their successors against the needle-guns of the Prussian lines of battle, if not mere skirmish lines, on more than one field.

In one respect general readers deceive themselves. The most mag-

[3] Conversion of the West. The Slavs, by the Rev. G. F. Maclean, D.D. London, 1879, page 59.

nificent cavalry of antiquity was not cavalry proper, like that of Frederick. For instance, at Cannæ the Roman knights dismounted to fight on foot. This made Hannibal laugh, and he said that they thereby rendered themselves as helpless as if they had been bound. Some writers who have given great attention to the subject consider that cavalry proper dates from the time of Gustavus Adolphus, and that the first battle in which they played their part appropriately was on the field of Wallhoff (so named from a hamlet in Courland), 7th January, 1626.

Napoleon, to whom so many opinions have been credited which, in most cases, were mere repetitions of trite sayings uttered centuries and tens of centuries before he lived, reduced the great captains of all ages to half a dozen. This was a great mistake. There has been a great general, in the truest sense of the word, to every century, and almost every lengthy period of war: some, like the "Thirty Years' War," producing a series, while others were very defective, thus justifying the above average. But throughout the annals of war there have not been more than two who fulfilled every requisite of a superlative general of cavalry,—Maharbal, Master of the Horse to Hannibal, and Seidlitz, who held the same relation to Frederick.

This, however, is wandering from the subject,—the Cavalry of Antiquity, of which a large proportion was nothing more than mounted infantry,—mounted archers and mounted pikemen,—just as within three centuries there were mounted muskeeters and mounted pikemen, who, when serving on foot, constituted as well-proportioned an organized force as the infantry proper.

Besides the troops mounted on horses there were others on camels or dromedaries, the latter revived by Napoleon in his Egyptian dromedary corps, and still or recently retained in the Persian service, under the title of Camel Artillery. Titus Livy mentions Arabian archers mounted upon camels who were likewise armed with swords six feet in length, to enable the rider to reach an enemy while still perched on the back of one of these lofty animals. As a rule, however, this camel-cavalry, so to speak, relied upon its arrows, and were a quasi-mounted rifle corps. Sometimes two archers, back to back, rode on the same camel, so as to be able to face an attack either in the front or rear.

At the risk of being charged with broaching a heresy or uttering a fallacy, the writer does not believe that cavalry proper—*i.e.*, neither dragoons, nor chasseurs, nor riflemen—has ever rendered services equivalent to the expense of its maintenance, except in regions or countries where the youth may be said to grow up in the saddle, and this habit has become second nature. To make a digression: the mounted troops which performed the most valuable services to their masters were the Parthians and their successors, the Mongols, and after the introduction of manageable fire-arms, the horsemen of the "Thirty Years'

War," who could both charge effectively and dismount to defend a field-work or storm a breach. There were certainly exceptions to this rule, but they were few in number and far between, such as the Theban and Thessalonian horsemen of Epaminondas, a comparative handful, always conceding unexampled superiority to the wild Numidian riders, who belonged to the same category as the Scythians, Parthians, Tartars, and Cossacks.

Greek writers admit that the Persian cavalry of the time of Alexander were very good, and that if the commander, Memnon,[4] had been listened to in the battle of the Granicus, these troops would have given an immense deal of trouble to the Macedonians. This is another proof that without a leader equal to the management of his Arm, the latter, however numerous and good, has been comparatively valueless. Witness the battle of Platæa, B.C. 479, where the Persian horse might have accomplished great things, whereas they were paralyzed, or their efforts neutralized, by the fall of their enterprising commander. The rejection of Memnon's advice at the Granicus, B.C. 234, explains their inefficiency on that occasion. The super-excellence of Hannibal's cavalry, B.C. 218–206, was entirely due to Maharbal. Such as he did not appear again for about two thousand years, until he revived in Seidlitz; just as there was a gap in mathematics, or military engineering, between Archimedes (murdered at the taking of Syracuse, B.C. 212) and Simon Stevinus, of Bruges, who was the father of Dutch engineering, and in this preceptor to the famous Maurice of Nassau, towards the end of the sixteenth century of our era. At Zama, B.C. 202, Hannibal owed his defeat chiefly to the fact that the Numidian horse, under the savage and revengeful veteran, Massinissa, were now arrayed against him, with the Romans of Scipio.

It is the fashion to elevate Murat to the rank of a great cavalry general. He was no more than his pseudonym expressed,—"le Beau Sabreur," exactly equivalent to the epithet "Hau Degen," applied to the fierce, untiring, impetuous Blücher.

Nevertheless the best ancient cavalry was impotent against the Phalanx, or even the Legion, until partially demoralized.

Timour was one of the greatest organizers and captains the world has ever seen. His comprehension of the capabilities of his myriads of barbarous horse, whom he had subjected to a discipline compatible with their nature, almost justified his boast that "he had compelled Fortune herself to watch over the prosperity of his empire." Still, his half a million of the very best riders in the world would not have conquered one-fifth of that number of the Turkish janizaries or infantry at Angora (1402) if the latter had been supplied with fire-arms. The

[4] Memnon, the Rhodian, if correctly reported by Diodorus, was one of the best strategists of all times. Had he been listened to or had he lived a little longer, there would, most likely, be far less to tell of the greatness of Alexander of Macedon.

successors of Timour's horsemen, the Arab or Saracen cavalry proper, shattered themselves against the Western chivalry, clad in iron, with long lances, although the latter did not possess either the mobility or celerity or efficiency of their assailants; because the knights represented living walls of iron, and possessed very much the resistive force of a well-organized infantry together with some of the attributes of mounted troops. The attentive world recognized this fact in the success of the Prussian Hulans, or lancers, during the "Seven Weeks' War" of 1866, over the Austrian light, supported by heavy, cavalry. The latter were actually pushed off the field without being able to reach their adversaries, whose superiority consisted in the length of their weapons. As previously mentioned, in the Franco-English wars the cavalry of the day actually melted away under the discharges of the English archers whenever the latter were properly supported and posted behind their stakes, which answered the purposes of bayonets. In the "Thirty Years' War," already referred to, the Polish and Imperial cavalry, both audacious and well led, and comparatively ably handled, accomplished nothing against the new tactics and novel artillery of the Swedes. As a whole, there were never better Reiterei (Troopers) than the Swedish at this period; but, then, they were no more than superlative dragoons. All this, however, is wandering somewhat from the subject. This article started out to treat of the Origin of Cavalry and its organization in the remote past. When the subject is resumed, it will be considered in its relations to the more systematic wars with which we are better acquainted; beginning with the era of Cæsar, of which there are authentic records. Thence, if time permits, it will be traced down through its various phases and changes to the present time. Like all other human developments, it has advanced like the wheel, one portion of the rim uppermost at one time, and again the same felloe underneath, but always gaining ground. With Attila (fifth century) there was a revival of the Scythian and Parthian systems. The feudal times renewed the Cataphracti of Mithridates (first century B.C.) and the cuirassiers of Hannibal (third century B.C.). With Maurice of Nassau (sixteenth century A.D.) modern cavalry was born. Gustavus Adolphus and his successors conducted it through youth to manhood, and Frederick the Great disciplined its maturity.

J. Watts de Peyster,
Brev. Maj.-Gen., S. N. Y.

"DAI NIPPON."

"THE difference between China and Japan is like a change between two worlds. China is stationary, fixed, and immovable; Japan, on the contrary, is turning a somersault, and transmutation is visible in everything. Although geographically so close to each other, yet intellectually and morally they are as wide apart as the arctic and tropical regions. In the one case, everything seems to have been frozen up for thousands of years, and at this moment their ideas appear to be as firmly imbedded as ever in the ice of ancient custom. In the other it would seem as if the vernal equinox had come round with its soft breezes, bringing out under its influence the young leaves and buds of a future summer along with it.

"'*Non possumus*' is the motto in China; in Japan they are straining every effort to copy whatever is European. Every attempt at railways or telegraphs has been opposed by the Celestials in all possible ways; and up to this moment not a single step in advance has yet been made in that direction among them. Already there are telegraphs all over Japan, one line of railway is now running, others are in progress, and there is not a modern improvement which they are not only willing, but most anxious to import into their country."[1]

The ancient history of Japan is full of romance, and delights the researches of the antiquary. Without entering into full particulars, which is not the purpose of this paper, it will be sufficient to state that it was first mentioned as *Zipangu* by Marco Polo in the thirteenth century. Many of our readers are familiar with his relation of what he saw. For a long time Polo was not considered worthy of confidence; but later investigations have demonstrated his truthfulness in relating his observations.

About the year 1278 the Mikado was assisted in the management of secular affairs by a Shogoon or Tycoon, whose office had become hereditary, as a kind of assistant emperor; and while the Mikado zealously performed his priestly duty of praying for the success of his armies, the Shogoon set a valiant example to the people, who victoriously repelled Kublai-Khan's invading forces. Henceforth the Sho-

[1] Meeting the Sun, by William Simpson, F.R.G.S.

goon retained the provinces with which he had been intrusted, and the spiritual and temporal superiors became joint rulers.

The Japanese are described by ancient writers as a fierce people. In 1542 the Portuguese were received into Japan, and their friendship, faith, and commerce warmly espoused until a reaction took place. Whilst Zavier and his zealous successors were winning in Nipon more than a million of souls to their faith, the race they found so tractable was carrying fire and sword into the opposite provinces of China. It was only when the active persecutions of the native Christians and Portuguese commenced that China found peace. The records of the courage and daring of these Japanese vikings read like those of the Danish invaders of Great Britain. "In 1552 the Japanese vessels," says the Chinese chronicle, "hundreds in number, covered the seas, and spread terror along the coasts of China for many thousands of *li*" (a *li* is about one-third of a mile).

It was the custom of the barbarians of Japan to divide their force into three divisions. The advance consisted of their stoutest men, and their rear-guard of the like; in the centre the brave and cowardly were ranged alternately. They rose at daylight, and fed on the ground. After this the chief, from an elevated position, read the orders for the day, detailing their duties, telling off the different companies, and assigning the place for their foray for that day. The companies did not consist of more than thirty men each, and moved at a distance of two-thirds of a mile from one another. At a blast from a conch-shell, the nearest company closed to support the one that had given the signal. Skirmishers deployed in twos or threes armed only with swords. Towards evening the force reassembled, and every one gave up his spoil, none daring to retain it. The chief then made a partition in just proportion to those who had contributed to the day's success. They were addicted to drunkenness and debauchery, and usually set fire to places they had sacked, and escaped in the alarm thereby awakened. Every precaution against treachery and surprise was closely observed. They marched by the flank in single rank, some distance apart, but in slow pace, and in such good order that the imperial troops could seldom take them at a disadvantage. Their powers of endurance were very great, and they marched vast distances without apparent fatigue. In action against artillery or archers, they awaited the first fire and then rushed in to close quarters. They were adepts in all the stratagems of war, and, though brave, used strange means to deceive the Chinese, and effect their end at as slight a loss to themselves as possible. Severe to prisoners taken in battle, they were nevertheless so kind to the people in the vicinity of their camps, that they were kept fully informed of all hostile movements against them. Fighting upon the water was not their forte, naïvely adds the Chinese annalist. "The bulwarks of their ships were all covered with cushions, which they damped to render

them proof against fire. In some actions, as soon as they came to close quarters, they boarded with rapidity; their onset was terrible as the thunder, and those on board were scattered like the wind."[2]

In a work entitled "Records of Things Seen and Heard," published in China, there is the following information: "A voyage of forty watches (eighty hours) will carry a ship from the island of Pootoo, in the Chusan group, to the heights of Changki (Nagasaki) in Japan, provided she steer an east course;" and the author adds, "that when the winds and currents are so perverse, and there are so many dangers from storms and seas, it is very difficult to maintain one course, and that the voyage is altogether extremely hazardous." Whereupon he incontinently goes off into the poetic vein, and gives utterance to the following rhyme:

"Jeh-pun-hán ho,
Wu-tan nán kno!"

which Mr. Wade renders,

"Goodly are the wares of Nipon,
But the isles of Gotto are hard to pass!"

(The Gotto Islands lie forty miles westward of Kiu-Siu: the southern cape is in about the same latitude as Nagasaki; the Gottos, therefore, would be a lee-shore to a junk in the southeast monsoon, if to leeward of her port.)

The Dutch, strange as it may seem, owe their introduction to Japan to the skill and heroism of an English sailor, William Adams, who was the pilot of a Dutch fleet which sailed from the Texel on the 24th of June, 1598, and entered Japan on the 12th of April, 1600.

In 1614 the persecution of the priests and their converts began, which ended in the expulsion of the Portuguese and the close imprisonment of the Dutch to the island of Decima. The Dutch remained undisputed masters of the field, although Sir Stamford Raffles made two attempts to break down their monopoly, both of them failing. After that no nation except Russia, whose ends seemed purely political, gave Japan further trouble until 1831. In that year the attention of our government was directed to the islands, and it was thought that a good excuse for introducing America to their notice in a friendly way might be found in sending back some shipwrecked Japanese sailors. The Americans received a very uncivil welcome, and the ship "Morrison" was repelled with violence. But not so the persevering nation that had sent her forth. If small ships did not succeed, larger ships might, accordingly the "Columbus" and the "Vincennes" were sent. This time we spoke plainly. Our government wanted intercourse for commercial and political purposes with Japan, as well as credit for philanthropy in returning unlucky Japanese sailors to their home. The

[2] Annals of the Art of War, extracts of, translated by T. F. Wade.

descendant of the Sun-goddess, however, still held out. "No trade except with Holland" was still his motto; and our government, being in no immediate hurry, displayed patience and watchfulness.

In 1849 the Japanese were foolish enough to retain some American seamen who were shipwrecked upon their coast. The sloop "Preble," Captain Glynn, forthwith dropped in and gave the Japanese authorities such a shaking up that they gladly liberated our unfortunate citizens. An efficient squadron, under the command of Commodore Perry, was sent, in 1853, to obtain by what is called moral force some specific terms regulating the intercourse of the two countries. Commodore Perry in his voluminous work has told us what means he employed to this end. The complete success of his mission is a matter of history.

The ink with which this treaty was signed was hardly dry when the Russian war broke out, and the Japanese found their islands, creeks, and inland seas used as a place for a game of hide-and-seek, played by the Russian and allied squadrons.

Every nation wanted a treaty with the Japanese, and England finally obtained one, in 1854, which must ever stand unique among such documents. It was, in vulgar parlance, a perfect "sell," the English receiving everything and giving next to nothing.

The first railway constructed in Japan is that which connects Yokohama with Tokio, the capital, a distance of eighteen miles. Leaving the former place, the road winds along the Bay of Yedo until the town of Kanagawa is reached, the place originally agreed upon as a treaty port. The foreign officials resided there until 1859, when Yokohama finally became the port of commerce and the site of the foreign settlements.

From this place the road passes through rice-fields, gardens, and pear-orchards, in which the trees are trained on trellises of bamboos, until the shores of the Bay of Yedo are again reached. Gentle slopes, crested by a dark fringe of pines and firs, lead to the sea; the quaint eaves of many a temple and holy shrine peep out here and there from the "cities of the dead"; the bay itself is studded with picturesque fisher-craft, the torches of which shine by night like glow-worms among the outlying forts; far to the west loom the goblin-haunted heights of Oyama, and beyond, the hills of the Hakoni Pass.

Fuji-Yama, the "Peerless Mountain," solitary and grand, stands in the centre of the plain from which it sprang, emitting flames, twenty-one centuries ago. For a hundred and sixty years the huge mountain has been at peace, but frequent earthquakes still proclaim the existence of its hidden fires, and none can say when the red-hot scoria and ashes may once more fall like rain over five provinces.

The station at Tokio is a commodious stone building, with its places of exit and entrance, its offices, and courteous officials ready to render all the assistance required by the stranger. Instead of cabs there are

the peculiar vehicles used only in Japan and China, called jin-riki-shas (man-power carriage). Each of these carriages is drawn by one coolie, who gets over the ground with surprising celerity.

The city of Tokio is about nine miles long and eight miles wide, and has a population of nearly one million. About one-eighth of the area of the city is occupied by rivers, canals, and the moats of the castle, which is in the centre. It consists of a citadel and a large area of land within strong earthen embankments, planted with trees, and faced with stone walls over fifty feet in height, and constructed in such a manner as to resist the shocks of earthquakes. The citadel, which is now dismantled, was formerly the residence of the Shogoon. In 1868 the Shogoon was reduced to the rank of daimio, and the Mikado occupied the citadel. In 1873 the Imperial Palace was destroyed by fire, and the emperor now lives in a palace which formerly belonged to a powerful daimio.

The emperor is of medium height, with an olive complexion, small hands and feet, and dark eyes of piercing brilliancy. He is the representative of the party of progress and civilization, and is a prince of strong and determined character. Of the many fair scenes in Tokio, the park attached to the imperial residence is pre-eminent. Imagine an immense inclosure of glorious firs and pines beautifully kept, splendid avenues which border broad walks, miniature lakes, bridges, artificial mounds, flowers of different varieties, and you have an imperfect picture of one of the numerous parks of the Mikado of Japan.

Although, through the influence and intelligence of the party of progress in Japan, some of the ancient manners and customs are fast disappearing before the resistless march of a broad and enlightened civilization, yet a vast majority of the inhabitants still fondly cling to the traditions of the past. This is exemplified in their daily intercourse and ordinary habits of life.

Every trade is represented by its distinctive symbol. A cluster of cypress, trimmed into a spherical shape, and varying from one to two feet in diameter, furnishes the ancient saké-shop sign, saké being an intoxicating liquor, of which large quantities are drank. It is also customary to place the young twigs of the cypress in the bung-holes of the kegs, or in the mouths of the bottles. The hatters suspend a long string of hats from their shops, and the maccaroni-dealers affix to their shop fronts a large paper lantern, which enumerates the name of the house, the edibles it will supply, and the price per bowl. Hosiers employ a sign which represents one side of a stocking, constructed so as to allow of the great toe being separate from the others. The sellers of crimson cosmetic for painting women's lips exhibit a small crimson flag. The purveyors of small rolls of rice and fish, furnishing each about two mouthfuls,—the Japanese sandwich in fact,—use a flag with their house-name and an enumeration of the various articles they pre-

pare. Wrestlers write their names on a board. Theatres exhibit representations of the most telling scenes in the piece being played. Herbalists and druggists display monstrous bags, resembling the small ones used in infusing the medicine. Makers of rosaries suspend a large rosary from their shops. Sellers of cut flowers plant a willow-tree at one corner of their houses. Tobacconists display their name and trademarks on a reddish-brown strip of cloth hung up in front of their shops. Kite-makers use as a sign a cuttle-fish. Sweet-cake dealers exhibit a painting of Fuji-Yama. Beggars may usually be seen in large numbers in the approaches to the temples on the chief festival days. Here may be seen the lame, the halt, and the blind, with cases of leprosy and deformity in some of their most hideous phases. The beggars accompany their prayers for the charitable with a terrific noise, which they make by striking small metal disks or battledores of raw hide that they carry. They frequently take their stand on bridges, or near running streams, where they importune the passer-by to purchase live eels or other fish, and to perform the devout work of releasing them from the spell under which they are supposed to be held as prescribed by the Buddhist doctrine. Among strollers we find the lion. This is a representation of a lion's head, with a movable under-jaw and a flowing mane fitted on to a capacious skirt, beneath which the man is concealed who works it. The lion is accompanied by two men, one performing on a small drum and triangle, and the other playing a flute, from which they extract excruciating music. The capacious mouth of the lion is supposed to swallow the evil spirits who may be attracted by his gambolings and the accompanying music. There are also strollers who carry with them performing monkeys. It is related that in years gone by, when the favorite horse of a famous warrior fell sick and was about to die, it was returned to health by a monkey that possessed a curative charm. For some years it was customary to amuse the horses in the government stables on New Year's day by a visit of the performing court monkeys, an example which was generally followed by the nobility.

Street tumblers and athletics are, with one exception, unworthy of notice. This exception is the wrestler, who, nearly naked, represents a wrestling bout, appearing to be struggling with an invisible opponent, and assuming the attitude of overcoming or being overcome by him.

The mode of conveyance formerly used by the court was the bullock cart. A chair of state was also used, hung on two poles and borne upon the shoulders of four men. The daimios used a form of palanquin slung on a long pole, and carried by several men, who walked before and behind. Physicians traveled in smaller vehicles than the foregoing, but some by means of long poles.

To each class of the Japanese population a special description of clothing is assigned, varying in material according to the season.

These may be divided into the ordinary, festive, mourning, professional, official, state, and other special fashions of dress. The laborer, farmer, and mechanic do not overburden themselves with clothing,—a loin-cloth forms their summer raiment, while their cold weather costume is usually comprised in a wrapper and short girdle. The better class of artisans and shop-keepers wear a short dress over all when out-of-doors, and from the thinnest gauze, which they wear in the heat of summer, they change in succession to a single cotton cloth, to double cotton, and finally to cotton-wadded garments in winter, silk clothing being reserved for festivals, visits, or great occasions. Firemen wear thickly padded and quilted dresses, with mittens and caps to correspond. In the national mode of dressing the hair, now gradually falling into disuse, the locks are gathered to the crown of the head, tied, and then carried over the forehead, a patch being kept clean shaven on which it rests. The court, officers of the army and navy, and the officials of the civil service wear the costume of Western nations, which is to be regretted, as the national dress is picturesque and becoming, and admits of the free use of the limbs, so essential to health and comfort.

R. S. C.

LINEAL vs. REGIMENTAL PROMOTION.

It would be difficult for any one who should devote an hour to looking over the pages of army registers from the close of the war, or from 1870, to the present time, to discover equality or justice in the present system of promotion among lieutenants of the line. One man stands for years at the head of the list, lineally, and sees those who came into the service after he had attained that position, pass him and carry off rank and pay that, in justice to his seniority, should have been his, and if he complain of or call in question the *modus operandi* by which he is thus overslaughed, he either gets no satisfaction, or is told that such is "the established rule," or that so "the law directs." The latter is at least more than doubtful, and if by the former expression is meant a "custom of the service," such a custom is "more honored in the breach than in the observance." Customs become obsolete as times change, and what may have been well enough two hundred years since may be impracticable now.

The reduction cauldron put into use in 1869, and temporarily taken off the furnace January 1, 1871, produced some curious compounds. A large amount of worthless scum was thrown off, and with it some good material, but in the cooling process it was the "line" that suffered most, and it was the general "mixing" that then took place that first drew the attention of many lieutenants to the gross inequality of regimental promotion. It would be impossible in any one article to show up *all* the wrongs of the present system; even partially to illustrate its evils involves the introduction of names which, could he do so with justice to his subject, the writer would fain omit. He trusts, however, that no offense will be taken, but that all will bear in mind that he wars on "principles, not men."

When the steam blew away, and the bubbling of the army kettle ceased, in January, 1871, the officers of the Fifth Infantry found that, among other changes, they had parted with a captain who had ranked as such from July 1, 1864, and in his stead had gotten one ranking from February 28, 1869,[1] who had only entered the regular army

[1] The officer referred to was Captain A. S. Bennett, who was killed in an affair with Bannock Indians on Soda Butte Creek, Montana, September 4, 1878. It is but justice to say that while the lieutenants of the Fifth Infantry lost in rank and

March 7, 1867, and who had, before his promotion, been junior in rank to nine of the first lieutenants still in the regiment to which he was assigned. Nor were they the only sufferers. He had, by this same system of regimental promotion, been "jumped" over the heads of THREE HUNDRED AND TWENTY-TWO first lieutenants of infantry[2] when he received his promotion to the rank of captain, and on joining the Fifth Infantry was assigned a company the first lieutenant of which had held that rank nearly three years before he (the captain) entered the regular service.

But there is no necessity to go farther back in army history than 1870 to give the present system of promotion a fair showing up; and to save time and space we will take only the promotions from first lieutenancies to captaincies in the three arms of the service. The following tabulated statements of promotion have been prepared from the registers of the different years, and a careful reading of them is invited. In making them up, where two or more officers have taken rank on the same day, those not promoted have been omitted from the count; as, for instance, an officer was appointed or promoted to first lieutenant February 23, 1866; none of those appointed on that day were counted in computing the number of those over whom he was promoted, as his position among them could not be determined without access to the records of the War Department, except as to those included in the last two registers, where the lineal rank of every officer is given.

1870.

CAVALRY.

	Promoted over
S. Guenther, 4th	4
A. B. Wells, 8th	51
A. Fechét, 8th	40
J. L. Humfreville, 9th	45
W. B. Kennedy, 10th	29
C. Powers, 4th	5

ARTILLERY.

B. F. Rittenhouse, 5th	6
J. G. Turnbull, 3d	0

INFANTRY.

No promotions to captaincies.

1871.

CAVALRY.

	Promoted over
S. C. Kellogg, 5th	6
H. Schreiner, 9th	24

ARTILLERY.

David H. Kinzie, 5th	7
H. C. Cushing, 4th	6

INFANTRY.

J. M. J. Sanno, 7th	0
S. E. Armstrong, 24th	181
G. H. Burton, 21st	20
A. B. McGowan, 12th	40
J. T. McGinnis, 13th	36
H. H. Humphreys, 15th[3]	36

promotion by his transfer into it, they gained by it in other ways. Ever kind, considerate, and genial, he was a universal favorite, and the writer has yet to hear the first word uttered against him. Serving as subaltern in his company more than six years, he had ample opportunity to know him thoroughly, and his many acts of kind thoughtfulness for those about him will never be forgotten.

[2] It will be remembered that there were at that time forty-five regiments of infantry in service.

[3] Promotion cancelled by reappointment of dismissed officer, and did not reach promotion again till 1873.

	Promoted over
W. S. McCaskey, 20th	36
C. Hale, 16th	36
W. M. Waterbury, 13th	74

1872.

CAVALRY.

G. W. Chilson, 8th	2
J. Burns, 5th	3
M. Moylan, 7th	5
T. J. Wint, 4th	8
C. E. Nesmith, 6th	21
M. Harris, 1st	0
Francis Moore, 9th	31
G. F. Price, 5th	33

ARTILLERY.

J. R. Myrick, 3d	2
J. R. Kelly, 3d	2

INFANTRY.

C. F. Robe, 25th	64
Thomas Britton, 6th	16
P. H. Ellis, 13th	140
A. H. Goodloe, 22d	16
V. M. C. Silva, 21st	28
W. M. Van Horne, 17th	27
Charles Porter, 8th	12
M. Hooton, 22d	32

1873.

CAVALRY.

H. W. Wessels, Jr., 3d	1
A. P. Caraher, 8th	2
Charles Bendire, 1st	0
J. H. Coster, 8th	18
P. M. Boehm, 4th	10
A. S. B. Keyes, 10th	19
James Wheelan, 2d	1

ARTILLERY.

W. P. Graves, 2d	8
E. A. Bancroft, 4th	6
Edward Field, 4th	9

INFANTRY.

H. H. Humphreys, 15th	30
O. W. Pollock, 23d	30
R. Pollock, 21st	63
J. L. Viven, 12th	63
C. Williams, 7th	0
A. W. Corliss, 8th	24
J. N. Morgan, 24th	149
J. Paulus, 25th	117
R. I. Eskridge, 23d	58
W. E. Dove, 12th	62
W. C. Beach, 11th	16
D. Hart, 25th	113
E. C. Gilbreath, 11th	29
M. J. Fitz Gerald, 9th	0

1874.

CAVALRY.

A. Kramer, 6th	14
E. M. Hayes, 5th	6
C. H. Campbell, 6th	15

ARTILLERY.

J. C. Breckenridge, 2d	8
James E. Wilson, 2d	8
C. P. Eakin, 1st	0
J. R. Brincklé, 5th	2
G. L. Wier, 5th	2

INFANTRY.

J. M. Norvell, 12th	55
B. H. Rogers, 13th	115
J. P. Willard, 15th	24
J. K. Hyer, 18th	15
S. P. Jocelyn, 21st	54
J. L. Johnston, 21st	54
S. Baker, 6th	13
C. O. Bradley, 20th	22
D. H. Murdock, 6th	52
William Logan, 7th	1
T. F. Tobey, 14th	11
D. T. Wells, 8th	19
W. H. Clapp, 16th	19

1875.

CAVALRY.

W. Harper, Jr., 6th	16
J. T. Peale, 2d	1
J. W. Kelley, 10th	13
W. H. Andrews, 3d	0
J. S. Payne, 5th	13
T. W. Custer, 7th	1
T. M. McDougall, 7th	8

ARTILLERY.

I. P. Sanger, 1st	0
W. E. Van Reid, 5th	1
J. H. Calef, 2d	2
C. C. McConnell, 5th	1
G. F. Barstow, 3d	0

INFANTRY.

J. W. Eckles, 15th	39
M. L. Courtney, 25th	120
H. S. Howe, 17th	44
J. B. Engle, 15th	94
Charles Keller, 2d	12
G. Luhn, 4th	1

1876.

CAVALRY.

	Promoted over
P. D. Vroom, 3d	0
W. C. Hemphill, 4th	4
T. C. Lebo, 10th	9
H. J. Farnsworth, 8th	10
William M. Wallace, 6th	24
W. H. Winters, 1st	0
H. J. Nowlan, 7th	6
J. M. Bell, 7th	6
H. Jackson, 7th	8
A. E. Woodson, 5th	19
R. Norwood, 2d	1
G. P. Rodgers, 5th	19
J. Lawson, 3d	0
J. Lafferty, 8th	6
E. C. Hentig, 6th	39
E. S. Godfrey, 7th	24

ARTILLERY.

W. B. Beck, 5th	9
Thomas Ward, 1st	5

INFANTRY.

T. F. Quinn, 4th	6
C. H. Conrad, 15th	97
S. McConihe, 15th	16
W. F. Spurgin, 21st	40
H. C. Pratt, 13th	112
R. M. Taylor, 20th	40
D. M. Lee, 6th	68

1877.

CAVALRY.

J. B. Babcock, 5th	12
T. J. Gregg, 2d	0
E. G. Mathey, 7th	62
G. E. Ford, 3d	4

ARTILLERY.

Arthur Morris, 4th	0
J. L. Tiernon, 3d	0

INFANTRY.

J. B. Nixon, 24th	95
W. H. Boyle, 21st	114
E. B. Savage, 8th	7
C. Durham, 18th	9
C. A. Coolidge, 7th	2
W. T. Hartz, 15th	96
T. Blair, 15th	113

1878.

CAVALRY.

D. A. Irwin, 4th	5
J. B. Johnson, 3d	8
J. H. Mahnken, 8th	14
E. B. Ward, 5th	35

ARTILLERY.

	Promoted over
No promotions to captaincies.	

INFANTRY.

C. A. Dempsey, 2d	8
W. E. Dougherty, 1st	6
L. Hay, 9th	2
G. F. Towle, 19th	9
S. H. Lincoln, 10th	9
A. Giddes, 25th	80
G. A. Goodale, 23d	27
O. B. Read, 11th	9
T. G. Troxel, 17th	85
C. S. Roberts, 17th	100
T. F. Riley, 21st	105
T. E. Merritt, 24th	105
M. Carter, 5th	0
H. R. Brinkerhoff, 15th	103
J. M. Thompson, 24th	101

1879.

CAVALRY.

A. G. Force, 1st	0
T. J. Spencer, 10th	2
H. W. Lawton, 4th	3
L. H. Rucker, 9th	3
J. D. Stevenson, 8th	8
H. H. Crews, 4th	13
G. A. Drew, 3d	14
E. Crawford, 3d	16
C. M. Callahan, 4th	13
H. Sweeney, 4th	17
W. J. Volkmar, 5th	43
B. Dawson, 9th	3
E. L. Huggins, 2d	9
W. R. Parnell, 1st	0
W. C. Forbush, 5th	39
J. G. McAdams, 2d	13
S. T. Hamilton, 2d	16
J. A. Augur, 5th	41
W. A. Thompson, 4th	22
J. C. Thompson, 3d	14
E. Hunter, 1st	0
L. O. Parker, 4th	31
J. P. Walker, 3d	15

ARTILLERY.

J. M. Lancaster, 3d	1
L. Smith, 3d	3
John C. White, 1st	2
John W. Roder, 4th	1

INFANTRY.

S. McKeever, 2d	8
M. Barber, 16th	12
P. M. Thorne, 22d	20
T. H. Fisher, 22d	15

	Promoted over		Promoted over
J. W. Bean, 15th	144	L. M. O'Brien, 17th	75
J. W. Bubb, 4th	6	William Auman, 13th	73
R. McDonald, 5th	5	W. W. Rogers, 9th	21
C. L. Davis, 10th	6	C. B. Western, 14th	8
F. D. Baldwin, 5th	8	Thomas Drury, 2d	9
J. H. Spencer, 4th	8	J. M. Lee, 9th	36
C. R. Paul, 18th	8	John Hamilton, 1st	9
A. Morton, 9th	20	W. N. Sage, 11th	7
C. H. Potter, 18th	20	James Miller, 2d	13
C. T. Witherell, 19th	25	Thomas Wilhelm, 8th	24
L. R. Stillé, 23d	35	R. Vance, 19th	23
H. G. Brown, 12th	37	D. F. Callinan, 1st	10
C. N. Gray, 25th	62	William Conway, 22d	46
G. W. Evans, 21st	83	R. G. Heiner, 1st	14
A. C. Markley, 24th	94	E. W. Stone, 21st	75
F. A. Kendall, 25th	68	T. B. Robinson, 19th	59

Total number of promotions to rank of captain during ten years, two hundred and twenty-two, *of which twenty, or less than ten per cent.*, were seniors in the arm of the service to which they belonged.

Suppose we investigate further.

In January, 1870, there were in service five first lieutenants of infantry who had ranked as such from 1863, and eighteen who had worn a "bar" since 1864. Of those dating from 1863, but one (Sanno, Seventh Infantry) reached a captaincy, and he—wonderful to relate—reached it in proper time by seniority. Of those ranking from 1864, five were retired, discharged, mustered out, or died without promotion, and one was transferred to the artillery.

Those who remained in the infantry can probably best appreciate the difference between lineal and regimental promotion. The latter, as contrasted with the former, has cost them as follows:

Names.	Regiment.	Loss in "Files" in List of Captains.	Time and Consequent Difference in Pay between First Lieutenant and Captain.
C. Williams	7th Infantry.	19	Two years, less seven days.
M. Fitz Gerald	9th "	27	Two years four months and fifteen days.
J. Kennington	14th "	24	Two years three months and ten days.
M. Carter	5th "	70	Seven years and four days.
Wm. Logan	7th "	32	Three years one month and nineteen days.
G. Luhn	4th "	41	Four years three months and six days.
G. McDermott	5th "	60	Six years seven months and three days, and died, without promotion, June 21, 1878.
C. A. Coolidge	7th "	49	Five years six months and fourteen days.
L. Hay	9th "	50	Six years and eleven days.
W. Mitchell	3d "	97	*Eight years* (April 1, 1880). Not yet promoted.
G. N. Bomford	18th "	59	Seven years eight months and eight days.
G. W. H. Stouch	3d "	55	Seven years and three months (April 1, 1880). Not yet promoted.

In plain terms, "established rules" and "customs of service" have cost Captain Carter over nineteen hundred dollars in difference of pay, while the loss to Lieutenant Mitchell, still accruing, has reached nearly three thousand dollars, and the others have suffered in the same ratio.

Nor is this all. The senior captain of infantry January 1, 1880, had gained sixty-four files in ten years, or an average of 6.4 files per annum. At similar rate the senior first lieutenants of 1870 will lose in getting to majorities as follows:

Williams, nearly three years;
Fitz Gerald, nearly four and one-half years;
Kennington, four years;
Carter, *nearly eleven years;*
Logan, over five years;
Luhn, six and one-half years;
Coolidge, seven and one-half years;
Hay, seven years;
Mitchell (if promoted now would lose), *fifteen years;*
Bomford, nine years;
Stouch (if promoted now), eight and one-half years;

with consequent loss of pay and allowances.

Nor do the second lieutenants fare any better than their seniors; and, if time and space permitted, fully as unequal promotion could be shown for them, but one or two instances must suffice.

Charles E. Hargous, Fifth Infantry, was a second lieutenant from July 28, 1866, to June 21, 1878, nearly twelve years. John W. Bean entered as a second lieutenant January 22, 1867, and was a *captain* March 5, 1879, gaining at least twelve years over Hargous by regimental promotion. In the promotion of S. E. Armstrong a double injury to his seniors resulted. He was retired June 28, 1878, and the vacancy thus created was filled December 28, 1878, by a first lieutenant who stood one hundred and second on the roster. Lieutenant E. A. Garlington, Seventh Cavalry, graduated June 15, 1876. The Custer disaster and regimental promotion made him a first lieutenant ten days after,—before he had reported for duty,—over eighty-eight of the same arm and grade, some of whom had borne the burden and heat of from four to nine years' service on the frontier, in addition to other years of service during the war of the Rebellion.

"But," said an M.C., to whom some of these things were spoken of, and who seemed interested in the story, "why don't you fight it?" Don Quixote fought a windmill, as we read Cervantes, and came out of the contest without gain or glory; a like fate has thus far attended the efforts of the lieutenants of the line in the struggle with the same kind of an enemy for lineal promotion.

In 1871 a circular reciting some of the injuries inflicted by regimental promotion, and asking for redress by legal enactment, if neces-

sary, was widely circulated through the army, and received over eight hundred signatures, among them many of field-officers. It was duly forwarded to Washington, and there, securely pigeon-holed, it still reposes. At each succeeding session of Congress since that date the subject has been agitated, but it has been impossible to get any action taken, and these unequal promotions have gone on unchecked. Now that the lineal rank of all officers must be shown in each annual register, the true state of the case can be plainly and easily made out, and it is sincerely to be hoped that those who have been sufferers will leave no stone unturned that will assist to overthrow the present method.

Why should captains and field-officers have one mode of promotion and lieutenants another? Let us hear what regimental promotionists say.

"Lineal promotion, with its consequent change of station under orders, will be costly to the government."

How costly? The past ten years have seen an average of a fraction over twenty first lieutenants promoted each year, and about the same number of second lieutenants. For many of these the mileage could be reduced to a minimum by making promotions at stated seasons, say twice a year, and then assigning an officer to the vacancy nearest him in point of distance, thus tending to lessen expenses. But allow that it *does* cost something,—which can best afford to lose, the officer entitled to the promotion or the government which he serves? Will the transportation of any officer promoted cost the government as much as loss of promotion has cost Carter, Mitchell, Stouch, *et al.*?

"It tends to lessen *esprit de corps.*"

Denied in toto. Does it have that effect among captains and field-officers? No one has ever offered to prove that it does, nor can any one say that the wearing of one more bar, or a gold or silver leaf, will change a man's nature. Regimental *esprit de corps* is very good in its place; to allow it to override that of the whole service is the pernicious State-rights idea in another and no better form.

In his "conclusions," drawn from personal examination and study of the different armies of Europe, General Upton says of lineal as contrasted with regimental promotion, "An important feature of an expansive peace organization should be lineal promotion in each arm of the service. The opposition to such promotion is based upon the supposed destruction of regimental *esprit de corps;* but the development of this feeling requires that companies of a regiment shall serve together, and, what is more important still, that the regiment shall be excited to emulation by serving with others in the same brigade or division. . . . Furthermore, desirable as it may be to cultivate this regimental feeling, it may be entirely absorbed in the pride and satisfaction of belonging, as in the German army, to the 'corps of officers.'

But whatever advantage may be claimed on the side of *esprit de corps*, it is more than counterbalanced by confining an officer from twenty to thirty years to the same regiment, whereby, if he remain continually with it, his knowledge of the army may be limited to the few associates he met on joining the service.

"The German officer is proud, not that he belongs to a particular arm of service, but because he is a member of the 'Officers' Corps,' in which he knows that advancement is sure, if he proves himself worthy and efficient." (Upton's "Armies of Asia and Europe," page 213.)

"It is, and has been for years, the established rule."

Granted. It has also been "the established rule" for Mtesa and other African potentates to maim or slay their subjects at will; but that does not make it right, nor make the sufferers feel any better about it. Officers may, like eels, get accustomed to being skinned (in promotion), and thus not feel it, but the writer and some scores of others are not yet thus "perfected."

"It amounts to about the same in the end; a man don't lose much any way."

For answer, see the foregoing statement of promotions for ten years past.

"It is the law."

Doubted, and proof challenged. Section 5 of act approved June 26, 1812, says, "And that from and after the passing of this act the promotions *shall be made through the lines* of artillerists, light artillery, dragoons, riflemen, and infantry, respectively, according to established rule." Section 12 of act approved March 30, 1814, declares, "That from and after the passing of this act promotions may be made *through the whole army in its several lines* of light artillery, light dragoons, artillery, infantry, and riflemen, *respectively*," etc.

Section 9 of act approved July 5, 1838, after some provisos about separating officers of the staff from the "line" of the army, adds, "And that promotion in said department (quartermaster's) *shall take place as in regiments and corps.*"

In the act making appropriations for the support of the army for the year ending June 30, 1852, Congress declares, "That *all promotions in the staff departments or corps shall be made as in the other corps of the army.*" And in section 9 of the act making provision for the support of the army up to June, 1854, we read, "And provided further, *that no officer shall be promoted before those who rank him in his corps.*" The article referred to relates more especially to the engineer corps, but it recognizes in its broadest form the rule of seniority in promotion.

In 1851 (see act of March 3), "Provided that all promotions in the staff department or corps shall be made *as in other corps of the army.*"

Section 1204 of the Revised Statutes reads as follows: "Promotions in the line shall be made through the whole army, in its several lines of artillery, cavalry, and infantry, respectively. Promotions in the staff of the army shall be made in the several departments and corps, respectively."

In all the laws above quoted it will be noticed that the word "regiments" occurs but once, and then in such connection as to show that no distinction was intended in promotion in regiments from that in the staff corps. "Promotion shall be made *through the whole line of the army in its several corps*," or words of similar import, are affirmed and reaffirmed; and if those laws authorized lineal promotion among captains and field-officers, they also affirm it among subalterns of "the line." Webster defines "through" as meaning, 1. "From end to end of, or from side to side of; from one surface or limit of to the opposite." 2. "From beginning to end, to the end or conclusion of;" while "whole" is declared to mean "The total amount or number . . . without diminution, as, '*the whole army*,'" etc.

"Senior" is defined as meaning "one older in office, or whose entrance upon an office was anterior to that of another; one prior in grade or rank;" and "seniority" as "priority or superiority in office or rank." The reader can make his own decision regarding legality.

"Regulations provide for it."

Regulations are not law, as is shown by the fact that some parts of them are set aside or replaced by others at the will and pleasure of the President or the War Department. A regulation made in *violation* of law is of no effect.

"The power of the Executive to establish rules and regulations for the government of the army is undoubted." (Note (*b*), page 134, Scott's "Digest of Military Laws.")

"Their (the Executive Department's) construction of a statute *when not affecting private rights* is held to be binding on the courts." (See Scott, page 134, note (*a*).)

"The War Department, representing the President in the administration of the army, has permanent authority from Congress to make regulations in aid and complement of statutes." (Attorney-General, January 1, 1857.)

He has, therefore, power to make regulations that shall conform to the laws of the land. Do any of those above quoted authorize regimental promotion? If not, upon what, then, is it based? Upon the mere opinion or preference of an army board, composed of officers high enough in rank not to be affected by it, and who had probably not given a thought to its ultimate effects, and it has been followed with that unreasoning respect for "precedents" that is more characteristic of the lawyer than the soldier. It has worked injury enough, has kept back deserving men, causing loss of rank, pay, and allowances,

has disgusted good men with the service, and sent many, tired of waiting, out of the army who would have benefited it by staying in. It has given to "luck" what was due to service and merit, and has allowed youth and inexperience to gain over age and tried skill. It defrauds an officer not only in one promotion, but its effects follow him all his life through, and into the next generation, by keeping his heirs out of funds he should have been paid, and have used for their benefit.

The future can easily be arranged for. If the President has power to make provision for promotion in one way, he can provide for another. If legislation is needed, Congress should not be slow to apply that remedy, and it can at the same time provide that all first lieutenants who have been overslaughed by officers who are still captains can, as fast as promoted to that grade, be given rank and place in the list of captains, the same as if promoted in their proper course.

Lineal promotion is the rule in almost all the armies of Europe. Seniority governs in all the departments of our own, save among subalterns of the line. Make the same rule operative through all grades, and promote field-officers regimentally or subalterns lineally. If the former was done, we should probably soon hear of "injustice" and "unfairness," and in tones that would reach even the leaden ears of Congress, and which would compel action on its part to stop the din. The navy makes itself heard when an attempt is made to give an officer only thirty files over his seniors. The army has sat quietly down and seen one man promoted over more than ten times that number of those who ranked him, and the thing in but little less glaring form goes on monthly, year after year. "All things earthly have an end." When shall we see the end of this?

HENRY ROMEYN, U.S.A.

WANTS OF THE NAVY—CANNON.

II.

In the past history of artillery there can be recognized certain periods which stand out prominently, and which can be regarded as guide-posts which determine the course of the development which followed after these periods had been reached. Among these there may be cited the introduction of horizontal firing of explosive projectiles, which led to the idea of providing a defense for ships; also the application of the rifling system to cannon which called iron armor into existence; which, in its turn, induced an increase in the power and weight of the guns; which again led to the use of the turret, as a means of applying the use of machinery to working guns, which, from their great weight, could not be manipulated by man-power.

But, in the future, it is probable that no period will be referred to with greater interest than that which may be dated from August, 1879, when Mr. Krupp made an exhibition of the great superiority of his built-up steel guns over the artillery of the rest of the world. On the field at Meppen there were no other guns to compete with those of Mr. Krupp, but, notwithstanding this, there is no hesitation on the part of the former partisans of guns that were supposed to be able to stand in competition to acknowledge that the power of his guns is much greater than that of any gun that they could have produced to take part in the contest.

In our reference to "guns that were supposed to be able to stand in competition," we refer to the Woolwich, Armstrong, and French guns, with which all European nations, who have not adopted the Krupp gun, are armed. The partisans of these guns are forced to recognize the comparative insignificance of the results that they have obtained, and must needs apply themselves to a further development of their systems, or must abandon them and follow the lead of the factory at Essen; or, what can be done with a better grace, by England at least, adopt the system of manufacture of the London Ordnance Works, where Mr. Vavasseur, in a quiet and unobtrusive way, unaided by government patronage, has been employed for years in the manufacture of steel guns, which are extensively adopted by South American and

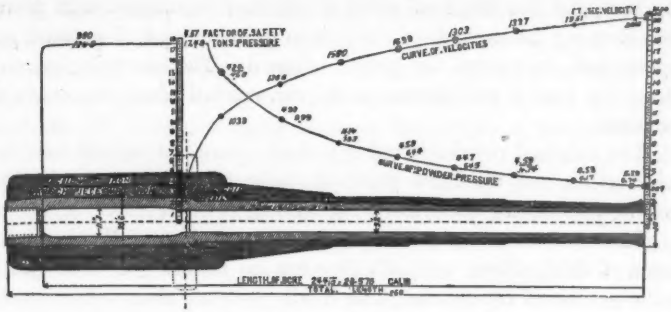
Asiatic powers, and which, if pitted against the productions of the Krupp foundry, will equal if not excel the guns whose performance has electrified the world at Meppen. We allude to the Vavasseur gun here, in passing, only to make an exception to our general remark that precedes. We expect to treat in detail of Mr. Vavasseur's productions in a later paper.

The defeat at Meppen has led to prompt and energetic efforts in England to repair the disaster. The government factory at Woolwich and the Armstrong works at Elswick feel that the challenge promulgated at Meppen must be answered, and the utmost resources of intelligence and manufacture at their disposal have been called into operation to design guns that can compete with the accepted standard as established by Mr. Krupp. The essential points in which their deficiencies exist have been recognized by both the establishments referred to, and in the new designs we recognize at once the greatly increased length of tube, and the adoption of the breech-loading system. In official precedence, we give the first place to the new Woolwich gun of 9.2 inches calibre, designed, no doubt, to compete with the 24-centimetre gun of Mr. Krupp, the performance of which was referred to in our last article in THE UNITED SERVICE.

The 9.2 gun, represented on page 731, is now in process of construction at Woolwich. In presenting the particulars of the Woolwich gun of the new construction, we associate with it in the following table, for convenience of comparison, the particulars of the 9-inch gun, Woolwich, old construction, and those of the 24-centimetre Krupp gun, with which the gun of the new construction is expected to compete.

PARTICULARS OF GUNS.	WOOLWICH, OLD CONSTRUCTION.	WOOLWICH, NEW CONSTRUCTION.	KRUPP, NEW CONSTRUCTION.
Size of gun, bore in inches.....	9	9.2	9.4
Weight of gun, tons.....	12	18	18
" projectile, pounds.	250	320	350
" charge, pounds....	50	160	165
Initial velocity, estimated, feet per second.....	.....	2025	.....
Initial velocity, actual, feet per second.....	1420	.....	1910
Total energy, foot-tons.....	3496	9096	8755
Energy per ton of gun, foot-tons	291	505	484
Length of gun, inches.....	147	260	
" tube, "	125	244½	213 } ?
" " in calibres....	13.9	26.570	22.66 }

As we have no official report of the experiments at Meppen, we have to depend on the accuracy of the reporters for the London papers for the particulars of the Krupp gun. The particulars of the Krupp 24-centimetre gun, given in the table above, are taken from Army Ordnance Note No. 113, reproduced from the London *Times* of August



PROPOSED 9.2-INCH WOOLWICH GUN.

18, 1879. The above table may be considered as quite sufficiently accurate, however, to give us a very distinct idea of the remarkable development in artillery that has taken place since the 9-inch gun of the old construction was built at Woolwich, and we can see by comparing it with the gun of about the same calibre now under construction, how earnestly the English artillerists recognize the necessity of increased length of tube, so as to obtain the velocity which is indispensable to develop energy.

The general plan adopted in building up the new gun is the same as is used in the old one; it is essentially what is known as the Woolwich construction, that is, the tube is of steel, which is surrounded with wrought-iron coils. Heretofore the thickness of the steel tube has been mostly uniform along its entire length, the thickness being taken at two-ninths of the calibre; but in this gun the rule is departed from, and we have a tube of varying dimensions in this particular, which, at the portion in front of the powder-chamber, has a thickness equal to that of the wrought-iron coil which immediately incloses it. This relation between the thickness of tube and enveloping coil seems to be preserved throughout the entire length of the gun, each successive coil being of the same thickness as the portion of the tube which it incloses. Taking the thickness of the tube to the rear of the tulip muzzle as the unit, we find that of the tube in front of the powder-chamber to be 3, while that of the midship portion of the powder-chamber is $2\frac{1}{2}$. If the old proportion of thickness of tube to calibre (two-ninths) is preserved at the muzzle, which is probably the case, this will give us, as the extreme thickness of the tube at its strongest part, 6 inches, and at midway of the powder-chamber 5 inches. The tube is reinforced with wrought-iron coils along its entire length, no less than 4 B coils being required to cover the great length. A C coil forward of the trunnions, and a D coil reinforcing the breech-coil and carrying the trunnions, completes the structure.

The powder-pressures are expressed in the cut at intervals along

the bore, and the factor of safety is given in connection with them, thus showing the strength of the gun to resist an internal pressure per square inch in tons at the points indicated. The increasing velocity along the bore is also shown in the cut, marked along the curve of velocities.

The enlarged powder-chamber and air-space is introduced into this construction, and Woolwich yields the point of muzzle *versus* breech-loading by adopting the principle of loading at the breech.

This gun must be regarded as the supreme effort of Woolwich for a gun of this calibre; evidently they can no farther go. The gun is yet in process of construction, and it will be some time before we can have any information as to its behavior under fire. It will, no doubt, be subjected to very extreme tests, and the hopes of Woolwich may be realized, but, however well the gun may be provided with strength to resist the force of internal pressure under comparatively few fires, there is reason to believe that, like its predecessors of the older construction, it may be found deficient in *endurance* from the same cause that has produced failures in this respect heretofore. Though the construction is new in some particulars, the principle on which the gun is put together is the same as in the case of the older guns; we still have a steel tube depending for its support on wrought iron, an inconsistency that has caused many a defeat to Woolwich in competitive trials. The steel tube will yield, through its elasticity, to internal pressure at the moment of discharge, the impress of this extension is felt by the wrought iron around the tube; the tube, through its elasticity, returns to its normal form, the wrought iron (which soon reaches its elastic limit) does not reassume its normal form, hence a separation of surfaces and eventual splitting of the tube. This has been the history of the past with the Woolwich gun.

In the *extremely* gradual combustion of the powder charge which is now practiced, however, there is a chance that the inconsistent assortment of metals in the Woolwich gun may not prove practically destructive. The character of the discharge now, in an enlarged powder-chamber with air-space, is less of the character of a shock and more like a flow of rapidly generated gas; a pressure is, as it were, substituted in place of a blow, and in this lies the chance for the success of the new gun.

But again, granting that the above suggested action of the force may favor the gun near the seat of the charge, how will this operate along the bore? If the pressure be diminished at the seat of the charge, it must be much increased along the length of the tube. In order to provide against this the new Woolwich gun has its tube, which diminishes in thickness to the muzzle, reinforced along its whole length to assist it in resisting circumferential strain; but this increased strain is longitudinal as well as tangential, and it may prove that this increased

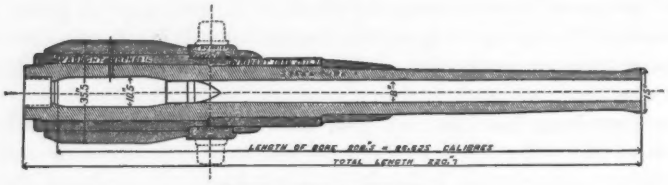
longitudinal strain is more than the thin tube can bear, in which case the B coils will be useless to prevent transverse fracture, as was shown on board the "Duilio" with the 100-ton gun. Thus, what may favor the gun at one point may prove injurious at another point. Time was when, on the complaint being made on the subject of the splitting of the tubes in the Woolwich guns, the defenders of that school would reply that "though tubes might split the gun was always *safe*," and confidence was learned to be reposed in the wrought-iron coils even if the tube was ruptured; but the lately proved incapacity of the coils to afford any resistance to longitudinal strain has dissipated this idea of safety, and makes it the more necessary to see that the tube is properly supported in all directions so as to prevent it from being fractured. A fracture at a point along the chase of the gun may not prove as disastrous to life as if it occurred more towards the breech, but it would have an equal effect in rendering the gun useless for further service.

There is no doubt that our good friends and cousins on the other side of the water are very obstinate, and the pertinacity with which they have clung to the principle of muzzle-loading is worthy of Englishmen. But we see, in the gun that we have under consideration, that good sense has triumphed over prejudice, and that Woolwich has thrown up the sponge. It must be recognized that Woolwich has adopted the breech-loading principle. The system that has been taken up is the so-called French system, which is familiar to all. There were, in fact, only two systems to choose from, for it is only the French and Broadwell systems, the latter adopted by Mr. Krupp, and now bearing his name, that have been proved by experience to be perfectly successful and trustworthy in practice. The Krupp arrangement for closing the breech is worthy of much more confidence than the French plan, if only from the fact that it has been put to much more severe tests, as the French system has never been experimented with in a gun that could compete with the 70-ton gun of Mr. Krupp, lately used at Meppen, but there are good reasons to show that the Woolwich people have adopted the best breech-closing arrangement for their gun. The Krupp fermeture is the more simple and solid, less likely to get out of order, and is more easily cleaned; but in the case of the Woolwich gun it would be utterly impracticable to apply it. The thin tube of the Woolwich gun, if continued to the rear, would be inadequate to supply the strength necessary to resist the longitudinal strain, and the reinforcing jacket of coiled wrought iron would be but a meagre support. The French system is the only one that could be adopted, and the new departure in the method of controlling the combustion of the charge favors its chances of success.

One of the great objections that could be urged, heretofore, to the use of the French fermeture was the danger that the pressure of quick-

burning powder being so high and so sudden at the seat of the charge, there was no time for the pressure to be distributed through the mass of the screw, and that only the first three or four threads of the screw would do any work; this has produced, as a constant occurrence, abrasions of the threads near the powder-chamber; with slow-burning powder, where the pressure is not so rapidly communicated, there will be time for all parts of the structure to do its share of work, and thus all the threads may bear their share of the longitudinal strain.

The second gun which we present for the information of the navy is the 8-inch Armstrong, a cut of which we are able to give, copied



8-INCH ARMSTRONG GUN.

from a drawing obtained from the Elswick works. The particulars given with this gun are as follows:

PARTICULARS OF 8-INCH ARMSTRONG GUN.

Size of gun, bore, in inches	8
" " chamber, in inches	10.5
Weight of gun, tons	11½
" " projectile, pounds	180
" " charge, pounds	90
Initial velocity, feet per second	2002
Total energy, foot-tons	5000
Energy per ton of gun, foot-tons	434.8
Length of gun, inches	220.7
" " tube, inches	208.5
" " " in calibres	26.625
Rifling, in inches	168.1
Grooves, twist { in calibres, 1 in 85 to 1 in 40. in inches, 1 in 680 to 1 in 320.	
Angle at muzzle, 4° 30′.	
Capacity of { bore, 11,752 cubic inches. chamber, 3160 cubic inches.	

This gun was built previous to the trials at Meppen, but evidently in emulation of what was known to be progressing at Essen. This gun was subjected to the test of nine fires at Woolwich in December, 1878, of which the following is a copy of the official report:

Round.	Weight of Charge in lbs.	Weight of Shot in lbs.	Gravimetric Density of Charge.	Cubic Inches per lb.	Number of Expansions.	Measured Velocity.	Muzzle Velocity.	Pressure in Chamber.	Energies—Foot-Tons.			Factors.		Energy per Inch of Circumference.
									Total Shot.	Max. per lb.	Realized per lb.	Actual.	8 — 1.	
						1691.2		*Tons.* Gun, 11.3						
1	70	182.77	0.614	45.14	6.055		1694.2		3637	67.3	51.96	.773	.575	144.7
						1685.1		Shot, 9.6						
						1946.2		12.8						
2	80	181.82	0.702	39.5	5.298		1849.3		4312	67.37	53.9	.798	.630	171.6
						1840.5		11.6						
						1893.7		14.4						
3	85	182.75	0.746	37.18	4.968		1897.5		4563	68.27	53.68	.786	.643	181.6
						1890.0		12.2						
						1995.0		16.75						
4	90	182.69	0.790	35.11	4.708		1998.5		5059	68.55	56.21	.82	.691	201.3
						1990.6		14.35						
						1923.3		14.05						
5	85	182.0	0.746	37.18	4.986		1927.0		4686	68.27	55.13	.808	.662	186.4
						1919.4		12.6						
						864.4		Cylinder.						
6	95	182.68	0.833	33.26	4.462				956	69.21	10.06	.145	.127	380
						863.4		Uncrushed						
						2091.8		18.4						
7	95	183.56	0.833	33.26	4.462		2096		5592	69.21	58.86	.85	.741	221.1= 2116 on 180 lbs.
						2089.3		15.7						
						2010.3		16.75						
8	90	182.78	0.790	35.11	4.708		2015.3		5147	68.55	57.19	.834	.703	204.8
						2010.3		14.10						
						1869.8		14.10						
9	95	183.06	0.833	33.26	4.462		1874.2		4459	69.21	46.94	.678	.591	177.4
						1868.0		11.20						

The range table for the gun gives 6000 yards with 90 lbs. charge, with an elevation of 9° 21′, and the same range with 65 lbs. charge with an elevation of 10° 38′.

By an inspection of the cut of the 8-inch Armstrong gun we see that the essential features of the construction are the same as in the Woolwich gun, involving the same inconsistent assortment of steel and wrought iron; but in this gun the steel tube is very much increased in thickness, making it unnecessary to supply to it the circumferential strength afforded to the Woolwich gun by the B coils. The principle of the enlarged powder-chamber and air-space is adopted, also the breech-loading system of the French, and the actual results of firing show that with 90 pounds of powder there was attained a velocity of 2015 feet per second, and with 95 pounds of powder a velocity of 2096 feet per second was reached. The discrepancies apparent in the results of rounds 6 and 9 are due to the powder that was used for those fires, one lot being somewhat experimental, and in the other case the charge being made up of a mixture of two kinds of powder.

The Armstrong 8-inch gun was built and tested, as shown above, before the experiments at Meppen took place. But the performance of Krupp's 24-centimetre gun has forced the firm at Elswick to commence the construction of a gun of larger calibre in order to compete with it. The Armstrong 9-inch gun, new design, is now in

process of construction, and some of the particulars of the gun are as follows:

Size of gun, bore, in inches	9
Weight of gun, tons	18
" " projectile, pounds	250
" " charge, pounds	150
Initial velocity, estimated	2118 feet per second.
Total energy, foot-tons	7774.5
Energy per ton of gun, foot-tons	432

The estimated velocity to be given with this gun is very great, and, if it shall be attained, it must be noted that it will be due to the light weight of the Armstrong projectile, which is only 250 pounds, as compared with the Krupp projectile, which weighs 350 pounds, and is actually projected with an initial velocity of 1910 feet per second. Yet, even if this velocity be reached in the Armstrong, we again observe that the superior weight of Krupp's projectile, with an inferior velocity, raises the total energy developed higher than is attained by the Armstrong gun, the comparison between the two being as 8755 in the Krupp to 7774 foot-tons in the Armstrong piece. We thus see that, in comparing the two guns, the work done by the Krupp is not only more than that done by the Armstrong, but that the work done by each pound of the Krupp gun is more than is done by each pound of the Armstrong gun. The guns are of equal weight, and if the power of each was equally developed we would have equal energies developed per ton of gun, but, on the contrary, we get from the Krupp gun an energy per ton of gun of 484 foot-tons, while from the Armstrong gun we only get an energy per ton of gun of 432 foot-tons. This point of comparison in guns is now considered of so much moment that it is being adopted as the new standard of comparison to which to refer competing cannon, as the comparison of energies per inch of shot's circumference simply gives the energy communicated by the gun to the shot, and does not give any idea of the relative energy developed by each ton of the guns themselves.

The comparison by energy per ton of gun is a very necessary standard for us to adopt when considering the armaments that we shall use for our unarmored cruisers, the subject to which we drew attention in our last paper in this magazine under the same general caption as this article. We want the maximum of power in our new guns with the minimum of weight, and in choosing between two guns which develop equal energies per inch of shot's circumference but of unequal weight, we naturally require the gun that, with less weight, develops the most energy per ton of gun.

We will close here for the present, with the hope that the above descriptions of new guns will be attractive and instructive to many members of the service who feel an interest in this great subject of

cannon, but who may not be able to obtain such information as is here given. It will be seen that the development of the power of artillery that has been made at Essen has stirred up all the other gun-makers in the world, and has put them on their mettle. In this paper there have been presented only the efforts of Woolwich and Elswick, the systems of construction of which establishments are almost identical. Their objective-mark is to reach the standard of the Krupp 24-centimetre gun, and it is very interesting to note the methods by which they try to achieve their object without departing from their established system of construction, which requires them to adhere to their wrought-iron coils. That Mr. Krupp has beaten them badly thus far in developing energy per ton of gun is a fact that cannot be disputed, and if in their new guns of their old construction they cannot develop an energy equal to Krupp's in proportion to weight of gun, then we may find that some of the cumbrous wrought-iron coils may be discarded, and the general adoption of steel in Europe will relieve us of all doubts as to what is the best metal of which to construct our future armament.

In our next paper we will present the steel gun of England, manufactured by Mr. J. Vavasseur, of London, which will be found able to sustain the character of English gun-makers even on the high standard of comparison established by Mr. Krupp.

E. Simpson,
Commodore U.S.N.

New London, April, 1880.

BITS OF ARMY ETYMOLOGY.

II.

In continuing our wanderings through the verbal excavations where others have labored to our great profit, we come upon *grenadier*, affiliated to *pomegranate*, *garnet*, *grain*, and *granite*, all of which, though attached to such different trains of thought, are underlaid by one idea, from the fruit, shaped like the missile, filled with particles in color like the jewel, but many and distinct, like those of the food and of the stone, to the *grenade* bearer himself.

Pioneer is related to the Spanish *peon* through the notion of labor common to both, but rather hidden under the uniform of the former.

Barbette has apparently no suggestion of beard in its military sense, but through the Italian *barbetta*, given as a name for the tuft of hair hanging from the pastern of the horse, and the fish *barbel*, so called from a similar attachment to the lip, we reach the mound of earth appended to the parapet upon which guns are mounted in *barbette*. So the *Barbadoes* were named from their trees *bearded* with moss, and a *barbecue* is a roast of the whole animal from *beard* to *tail*.

In the preceding paragraph we note *pastern*, or that joint to which the shackle was attached when the animal was at *pasture*, whence a name for both shackle and joint—*pastorium*.

The *parapet* is that which is for the *breast*, like *petronel*.

The meaning of *paragon*, considering that it is only a couple of prepositions, *para* and *con*, shows a great deal of meat for a very small skeleton.

Canteen is descended from a term meaning cellar, and so a place for the sale of refreshments and the article containing them. This term running into the further signification of *corner*, German *kante*, gives *decanter* as that which by *canting* fills or is filled.

Forlorn hope is not a phrase growing out of any anticipated desperation of attack, but denotes the *foreleading troop*, and is quoted by Brewer as used in Cromwell's time for an ordinary vanguard, as a forlorn of horse, a forlorn of foot.

Hurrah, from the radically different tongues in which it prevails, must be set down as an international interjection.

Howitzer originates in a word that meant a sling, while the *lanyard* has ceased to be a cord of wool, if akin to *lana* and not related simply to *length*, and *cord* also retains little of its primary meaning of *gut*.

Casemate and *checkmate* are allied in their latter halves, one meaning a slaughter-house and the other a slaughtered king. Our own casemates happily shelter nothing more deadly than the spider that weaves his web over the mouths of rusty smooth-bores, or the rotten tubs of the laundresses that were.

Is not the world at peace, from the Czar in his winter palace to the pendent Afghans that mark the progress of British civilization towards the Oxus, from the sweet charities of Kemper County to the sand lots of San Francisco, with their new Saint Dennis and his gospel of America for the—Americans?

Hurrah for the Monroe doctrine, the Panama Canal, and our seacoast howitzer, model, 1839! But enthusiasm is entirely out of place in philology, and becomingly subdued we return to our dictionaries, comforted with the assurance that happen what may the nation *began* its history with Bunker Hill and "Old Ironsides."

Mortar hath an odor of *mortality* about it, whether worked with primer or pestle.

Ambush and *ambuscade* still carry about them the *bushes* in which they originated.

There is a race of tailed men outside of Africa, known at least to etymology as *cowards*, from Latin *cauda*, and thus characterized, so far as visible, as either *turn-tail* or *all-tail*.

The *poltroon* is a lie-abed, like Paris when Hectors of the glancing helm are afield. The same root is seen in *bolster*.

Garrison, guard, garnish, garret, call up associations by no means identical, though the words are so in origin, through the notion of protection, extending into ornament.

Turbulent, through the chastening influence of drill, makes its appearance in *troop*.

Varicose veins are far more common in the service than *prevarication* no doubt, but both words imply an abnormal stretch of material, the *prevaricator* being a person who straddles widely in the narrative either of his own or other performance.

The *cartridge* may well come to the support of *magna charta*, and if our laws are no longer *graved* upon tablets of brass, but trusted to paper, brass, rather than paper, incloses the modern *cartridge*, from which it might be reasonably inferred that powder is gaining what the law has lost.

Moulinet is connected with *mill*, probably through the wheel of each. Here comes in *emolument* as the toll of the *miller*; but in view of recent Congressional action upon fuel and forage, the subject becomes too painful to dwell upon, deriving yet another mournful illustration in

the "ten per cent. additional" *ground* out of, or rather into, the mess bill.

Mess originates in its most convenient furniture, the table,—*mensa*,—and so becomes akin to *month*, as a *measure*, and to *moon*, as the *measurer* of time from of old.

Muster is a *demonstration* of what is available in the way of men and equipment.

Inspection, *skeptical*, *bishop*, and *spice* are all fruit from the same stock, the radical signification being to look into, and thence passing over to the thing looked for, as in the last instance, where drugs, etc., were the main characteristic of cargoes homeward bound before the aromatic gales from Araby the blest.

Some army people may recollect to have seen a *demijohn*, but the attempt to derive the word from a certain Lady Jane—*dame Jean*—is never-to-be-enough reprobated, while the fact that the article when delivered per express is seldom more than half full of *John Barleycorn* is only a singular coincidence. The etymologists have safely hunted up a town over in Persia once famed for glass-works, and called *Damaghan*, which is made to stand sponsor for this deleterious dish.

Gallantry discloses a literal trace of the old meaning of song heard in the *nightingale*, and upon a *gala-day*, but lost in the significance of the usual official routine phrase, "gallant and meritorious service."

The word may also be related to the Scotch *callant*, and thus help to support the theory that bravery and decision belong to youth, though it would be hard to find a more brilliant example of dash than Suwarrow at seventy in Italy, and the octogenarians might exemplify their energy and resource in Radetzky at Novara and Fabius at Tarentum.

H. W. C.

NAVAL UNIFORMS.

"Buttons! Buttons! nothing but Buttons."

It is not known from any document in the Admiralty, nor does it appear by the gazette, when the first British naval uniform was established by George II. The first mention of a British naval uniform is in the *Jacobite's Journal*, March 5, 1748, which says,—

"An order is said to be issued requiring all of his Majesty's officers, from the admirals down to the midshipmen, to wear an uniformity of clothing; for which purpose pattern suits for dress and frock coats for each rank of officers are lodged at the navy-yard and at the several dock-yards for their inspection." The gazette of July 17, 1757, refers to this order in noticing the first alteration that was made.

Mr. Locker, a commissioner of Greenwich Hospital, says, "In the naval gallery of this institution I can show you every variety of cut and complexion of dress. Nottingham, Raleigh, and Torrington expended their dignities in courtly costume. Lawson, Harmon, and Monk frown in buff belts and jerkins. Sandwich, Munden, and Benbow shine forth in armor. While Rooke, Russell, and Shovel, the heroes of a softer age, are clothed in crimson and Lincoln green, surmounted with the flowing wig, which then alike distinguished the men of the robe and the sword." Admiral Boscawen's boat, when he was shifting his flag, and passing from one ship to another, was struck by a shot, and would have sunk under him had he not taken off his flowing wig and stopped the leak with it. A portrait of Commodore Brown, who, with Vernon, took Porto Bello in 1739, exhibits him sword in hand in a full suit of russet brown. When the brave Admiral Kempenfelt, unhappily lost in the "Royal George," was coming into port to have his ship paid off, a sailor eyed a gold-laced velvet waistcoat which his commodore wore with great earnestness, and in his best sea-fashion begged to know who made it. Perceiving his drift, Kempenfelt gave him the necessary information, and Jack went on shore and forthwith applied to the commodore's tailor to have a waistcoat made like his. The tailor knowing the humor of his customer, went with him to buy the material, and questioned him as to what he would have the back made of. "Made of!" said Jack; "the same as the front to be sure!"

The tailor remonstrated, but in vain; so the waistcoat was made, and put on with an old greasy jacket over it. One day on High Street the commodore met his man in this curious dress, and laughed heartily, and his laughter was not a little increased when Jack, with the freedom his discharge gave him, lifted up the hind part of his jacket, and showing his gold-laced back, exclaimed, "D——n me, old boy, no false colors; stem and stern alike, by George!" In 1746, Captain Wyndham and all the officers of the "Kent," 70, wore gray and silver, faced with scarlet; such foppery was not unfrequently combined with check shirts and petticoat trowsers. The same year a club of officers, who met every Sunday night at Wells's Coffee House, Scotland Yard, "for the purpose of watching over their rights and privileges," determined (February 16, 1746) "That a dress uniform is useful and necessary for the commissioned officers, agreeably to the practice of other nations;" and a committee was appointed to wait upon the Duke of Bedford and the Admiralty, and if their lordships approve, introduce it to his Majesty.

Mr. Locker says he had it from the lips of Mr. Forbes, admiral of the fleet in 1746, that he was summoned to attend the Duke of Bedford, and was introduced to an apartment surrounded with various dresses, and his opinion was asked as to the most appropriate. The admiral said, "red and blue, as they are our national colors." "No," replied his Grace, "the king has determined otherwise; for having seen my duchess riding in the park a few days ago in a habit of blue faced with white, the dress took his Majesty's fancy, who has appointed it for the uniform of the Royal Navy." There is no trace of an order or board's warrant at the Admiralty for this regulation, though the year of its institution is proved by the gazette of 1757, where an order of council appears superseding the embroidered uniform established in 1748, and appointing in its stead a laced uniform for the flag-officers and others under their command. On the accession of William IV. he restored the national colors,—blue with red facings. On the accession of Queen Victoria, or soon after, the facings were again changed to white. It is not our purpose or province to follow the varying changes the British naval uniform has undergone, but simply to show the date of its establishment. From the officers wishing for one "agreeably to the practice of other nations," it would seem England was not the first to adopt a naval uniform.

As early as 1603, King James ordered his principal "maisters of ships" to be most bravely attired in liveries of scarlet cloth, embellished with velvet, silk lace, buttons, and gold embroidery; and the precept mentions its being the renewal of the warrant of the late Queen Elizabeth for the same purpose, but by reason of her death not acted upon.

Epaulets are the palettes of Henry IV.'s time, which were circular

plates of metal to protect the shoulders. They were not ordered to be worn as a part of the English naval uniform until June, 1795. Their French origin was sufficient to incur the detestation of Lord Nelson, who, speaking to Captains Ball and Sheppard, said, "They wear fine epaulets, for which I think them great coxcombs." He was destined to receive his own death-wound through his epaulet.

"I had the watch on deck," said Prince William Henry (afterwards William IV.), "when Captain Nelson, of the 'Albemarle,' came along side in his barge. He appeared to be the merest boy of a captain I ever beheld, and his dress was worthy of notice. He had on a full-laced uniform; his lank, unpowdered hair was tied in a stiff Hessian tail of extraordinary length; the old-fashioned flaps of his waistcoat added to the general quaintness of his figure, and produced an appearance which particularly attracted my attention, for I had never seen anything like it before, nor could I imagine who he was or what he came about. My doubts were, however, removed when Lord Howe introduced me to him."

In most, if not all, of the biographies of Nelson it is stated that previous to the battle of Trafalgar he descended to his cabin, where he decorated himself with the insignia of all his orders, and remounted the deck in conspicuous splendor, and on being told by Captain Hardy that his stars and medals would mark him to the enemy, he exclaimed, "In honor I have gained them, and in honor I'll die with them." Captain Hardy's version of the story is, that Nelson dressed himself in the same coat which he had commonly worn since he left Portsmouth; it was a plain blue coat, on which the star of the Bath was embroidered, as was then customary. While walking the deck, and after the firing had commenced, Hardy remarked that the badge might draw attention from the enemy's tops; to which Nelson coolly replied, "He was aware it might be seen, but it is now too late to be shifting a coat." The coat, of coarse blue cloth with the bruised epaulet attached through which the deadly ball penetrated, and on the breast of which is the large embroidered star of the order of the Bath, is preserved with other relics of the hero in the Nelson room at Greenwich Hospital.

The custom of placing the uniform, sword, epaulets, etc., on the coffin of a deceased naval officer at his funeral is a relic of the Church of Rome, it having been the custom to offer the gorget, sword, helmet, etc., of the deceased officer at the mass said for the repose of his soul prior to interment.

The facings of military and navy coats, which still continue to distinguish the uniforms of different regiments of the British army, and give to them the designations of "The Buffs," "The Blues," "The Reds," etc., called in French "Revers," or "Revers d'un habit," are well known to have originated in the custom of buttoning back the

lapels, and buttoning or pinning back the skirts of the old long-waisted frock to allow of a freer use of the musket or side-arms, thus exposing the lining of a different color from the rest of the garment. As early as the beginning of the present century, and certainly soon after, the use of distinct colored facings seems to have been abandoned by our navy.

The first American naval uniform of which we have any knowledge is contained in the following resolve of the Massachusetts Council, April, 1776, one of several providing for the regulation of the sea service of that colony:

Resolved, That the uniform of the officers be green and white, and that they furnish themselves accordingly; and that the colors be a white flag with a green pine-tree, and the inscription "An appeal to Heaven."

When the Continental navy was formed, of course one of the first things thought of was a uniform for the officers, but it is a question whether the seamen wore a prescribed dress: probably none was required.

The prevailing colors of the Continental army in 1776 were blue, red, and buff; thus, the facings of the blue coats were red, and the plumes white tipped with red. The buff and blue, commonly regarded as the Continental uniform, was that of the general officers, and not of the body of the troops.

In the navy the same was the case. The prevailing colors of the uniforms of the officers of the navy were blue and red; the uniform of the marine officers was green and white, the colors of the Massachusetts flag, and of the flag of the floating-batteries. It does not appear, however, that there was ever issued any official order prescribing a uniform for the officers of the Continental navy.

On the 5th of September, 1776, the Marine Committee prescribed the following uniform for the navy and marine officers of the United States navy, which is the first official regulation on the subject:

UNIFORM OF NAVY AND MARINE OFFICERS.

In Marine Committee, PHILADELPHIA, September 5, 1776.

Resolved, That the uniform of the officers of the navy of the *United States* be as follows:

Captain.—Blue cloth, with red lappells, slash cuff, stand-up collar, flat yellow buttons, blue breeches, red waistcoat, with narrow lace.

Lieutenants.—Blue, with red lappells, a round cuff faced with red, stand-up collar, yellow buttons, blue britches, and red waistcoat, plain.

Master.—Blue, with lappells, round cuff, blue britches, and red waistcoat.

Midshipmen.—Blue lappelled coat, a round cuff faced with red, stand-up collar, with red at the button and button-hole, blue britches, and red waistcoat.

UNIFORM FOR THE MARINE OFFICERS.

A green coat faced with white, round cuff, slashed sleeves and pockets, with buttons around the cuff, silver epaulette on the right shoulder, skirts turned back,

buttons to suit the facings, white waistcoat and britches, edged with green, black gaiters and garters.

Green shirts for the men, if they can be procured.

(Extract from the minutes.)

JOHN BROWN, Secretary.

In the manuscript diary of William Jennison, lieutenant of marines on board the U. S. "Boston," Captain Samuel Tucker, then just arrived on the coast of France, and which is now in the possession of the Rev. Joseph F. Jennison, there is noted the following requisition, under date

"*April* 11, 1778.—On board the 'Boston.' Wanted, for the use and service of the marines belonging to this ship,

40 green coats faced with white,
40 white waistcoats, and
40 white breeches.

"The buttons of the whole to be a plain white. Coats to be open-sleeved, and a belt for every waistcoat.

"In behalf of the captain of marines.

"WM. JENNISON,
"Lieutenant of Marines."

It appears from this that the buttons for the marine uniform at that date were not gilt, but were covered with plain white, like the facings.

Under date "May 13" we find "Regimentals for the marines, an *uniform ordered by Congress*," was brought on board and distributed to all officers and men.

This uniform does not seem to have pleased some of the officers concerned, for in the MS. papers of Paul Jones, preserved in the Congressional Library, we find the following original paper, which is indorsed "Uniform dress for the navy agreed to at Boston by the major part of the captains, March, 1777."

FULL DRESS FOR POST CAPTAINS.

Dark blue coats, white linings, white cuffs, and narrow white lappells the whole length of the waist. The coats full trimmed, with gold lace or embroidered button-holes. The buttons at equal distance asunder on the lappells. The upper part of the lappells to button on the upper part of the shoulder, three buttons on each pocket-flap, three on each cuff. Stand-up blue collars. White waistcoats, breeches, and stockings. Dress swords. Plain hats, black cockades and gold buttons and loops. Gold epaulets on the right shoulder, the figure of a rattlesnake embroidered on the straps of the epaulets, with the motto "Don't tread on me." The waistcoat trimmed with gold lace, yellow flat buttons, with the impression of the rattlesnake and motto "Don't tread on me" on each of them.

UNDRESS FOR POST CAPTAINS.

The same as dress coats, with the difference that the undress coats have frock backs and turn-down white collars.

DRESS FOR LIEUTENANTS.

The same as for post captains excepting the lace and embroidery, the epaulets, and that instead of the rattlesnake they wear buttons with the impression of an anchor.

UNDRESS FOR LIEUTENANTS.

The same as for post captains excepting the lace and embroidery, the epaulets, the buttons, and that the coat be made short, or such as are usually called coatees.

Dress and undress for *masters* and *midshipmen* the same as for lieutenants excepting the lappells, and that they wear turn-down collars on their dress and undress coats.

Dress and undress for commanders of ships and vessels under twenty guns. The same as for post captains excepting the epaulets.

(Signed) JOHN MANLY,
HECTOR MCNEIL,
DUDLEY SALTONSTALL,
E. HINMAN,
JOSEPH OLNEY,
JOHN ROCHE,
JOHN PAUL JONES,
HECTOR MCNEIL for CAPTAIN WILLIAM THOMPSON,
JOSEPH OLNEY for CAPTAIN ALVAH WHIPPLE.

Whether the uniform recommended, or rather "agreed to" by the captains was established, and the buff facings superseded the red facings of the Marine Committee's order, I have been unable to learn. Old naval portraits show both uniforms,—that of Captain Nicholas Biddle, in Independence Hall, Philadelphia, has red facings; one of Paul Jones, the white. It seems also, from the following extract from John Adams's Diary, that the uniform of the marines was changed from green to red, the facings being the same in both uniforms. John Adams, who did not love Jones, says in his Diary, dating from Port Louis L'Orient, Thursday, May 13, 1779:

"After dinner walked out with Captain Jones and Landais to see Jones's marines dressed in the English uniform, red and white; a number of very active and clever sergeants and corporals are employed to teach them the exercise, and manœuvres and marches, etc.; after which Jones came on board our ship. This is the most ambitious and intriguing officer in the American navy. Jones has art and secrecy, and aspires very high. You see the character of the man in his uniform, and that of his officers and marines *variant from the uniforms established by Congress*,—golden buttons for himself, *two* epaulets; marines in red and white instead of green. Eccentricities and irregularities are to be expected from him. They are in his character, they are visible in his eyes. His voice is soft and still and small; his eye has keenness and wildness and softness in it."

This uniform for the officers and the scarlet dress of the marines must have been worn on board the "Bonhomme Richard" in her battle with the "Serapis" in September following.

An unknown newspaper writer remarked twenty-five years ago, "The officers of the first navy were in many respects different from the present. In their dress there was but little show of grandeur. They wore small cocked hats, without lace; hair powdered and curled; coats with ample skirts and foul-anchored buttons, small-clothes, hose, and shoes. Their dignity and sternness, when they aimed at any, was not before their countrymen, but before the enemy. They had not been bred originally for drawing-room and courtly display; but they had no deficiency in polished circles when called to the exercise of their rules and usages."

I have not at hand the regulations concerning the uniform of the present navy prior to 1830, but something of its character can be gathered from the portraits of prominent officers which are extant. Commodore Edward Preble's portraits, all taken between 1804 and 1807, represent him in a blue double-breasted coat with stand-up collar, the lapels of the same color, buttoned back. The collar, lapels, and button-holes all gold laced, also the cuffs around the upper part, with three or four buttons, the button-holes gold laced to the end of the sleeve. He has on a white vest and a white ruffled shirt, with collar turned over a white cravat; two epaulets, which from their shape are suggestive of the name "*swabs*," by which they were often familiarly called. The portrait of Commodore Alexander Murray, of about the same date, is similarly uniformed. Commodore John Barry's portrait, perhaps a few years earlier, represents him wearing two epaulets, a standing turn-over collar to his coat, the lapels of which are faced with white, no lace on his coat, and a ruffled shirt.

The portraits of Bainbridge, McDonough, Decatur, Hull, and Lawrence, all of the 1812–14 era, represent them in double-breasted coats with standing collar, coat and the collar laced around the edges, but the button-holes not laced. They have on black cravats, white ruffled shirts, and epaulets. Perry's coat has a rolling collar with an anchor button on each side of it.

Commodore Preble's cocked hat, which is preserved by his descendants, is of huge dimensions, and would make two of our present uniform. After his death his uniform coat was presented by his brother to Commodore William Bainbridge, who returned a suitable acknowledgment.

It is related of Commodore Hull that in the fight between the "Constitution" and "Guerriere," he was clad in a pair of nankeen pantaloons, the day being very hot, and the excitement of manœuvring the ship to get the weather gauge of the enemy did not tend to allay a profuse perspiration. Meanwhile his lieutenants were continually coming to him, inquiring, "Captain Hull, shall we fire?" "No," he said; "when I say the word let them have it." Watching the favorable opportunity, he exclaimed, "Now!" and fitting the word to the

action, raised his foot and stamped an emphatic "Now!" but the force of the act being more than moist nankeen could bear, he split his "trowsers," as the tars said, "from clew to earing" simultaneous with the first broadside, and fought the rest of the action without a furl to his shirt.

In 1830, John Branch, Secretary of the Navy, issued an order materially changing the uniform of the United States navy in all its branches, which was to take effect on the last day of the year,—an expensive New Year's present to the officers, which no doubt delighted the tailors. By this order the full dress of captains was to be of dark blue cloth lined with white, double-breasted, with long lapels, cut with a swell, nine buttons on each lapel, which was to be buttoned back, and an equal number of button-holes worked in twist as long as the width of the lapels would allow, standing collar lined with white, and embroidered in gold (in place of lace) around the upper edge and sides with a rope and with leaves of live-oak and acorns. Four buttons on the cuffs, which, with the pocket-flaps, were to be embroidered like the collar. Two gold epaulets. White single-breasted vest with pocket-flaps, under which were four small buttons. White breeches with small navy buttons and gilt knee-buckles. White silk stockings and shoes with gilt buckles, or plain white pantaloons and short boots or shoes and buckles. Previous to these regulations the buttons of the several grades had different devices, but by these all officers were to wear the buttons styled No. 1, heretofore prescribed for captains. The portraits of Commodore Charles Stewart, painted by Merrill, and that of Captain R. F. Stockton, painted by Newton in 1840, show this uniform.

The undress had a rolling collar and single-breasted vest white or blue, with pantaloons white or blue according to the season; subordinate officers were to wear corresponding uniforms. Thus master-commandants had no embroidery on the pocket-flaps, and but three buttons instead of four on the cuff and under the pocket-flaps; lieutenants were to wear only one epaulet, and that on the right shoulder; midshipmen had the collar of their coats ornamented with a foul anchor embroidered in gold under the oak leaves and acorns, and when passed, the anchor was backed with a five-pointed star—in undress their jackets had only an anchor, or anchor and star—of white cloth on the collar. The full dress of masters had a button on each side of the collar and a laced button-hole, but no epaulets. The collar of the surgeon's coat was ornamented with an embroidered club of Æsculapius, the pursers with a cornucopia, and the collars and cuffs of the surgeons in undress were to be of velvet, with a strip of gold lace half an inch wide around the upper part of the cuff; chaplains were to wear a black coat, vest, and pantaloons, with black covered buttons. Epaulets were only to be worn with cocked hats or caps. Swords were to be cut and thrust, the grip of those of commissioned officers and midshipmen to be white, all

others black, with eagles' heads, yellow mounted, and black leather scabbards. All officers to wear black cravats, and to show the collar of the white shirt above. Officers in undress without epaulets were permitted to wear round hats, with rose-formed black cockades, or blue cloth caps, and on board ship blue cloth jackets, gray cloth or brown drilling trowsers, and black vests might be worn. Belts were to be of white webbing for full dress, and blue for undress; and captains, commanders, and lieutenants wore a band of gold lace one a half inches wide around their caps.

In 1832 the serpent and staff was removed from the full dress of the medical officers, and the cornucopia from that of the pursers, as they thought those emblems smelt too strong of the shop, and a branch of live-oak was substituted. The velvet was at the same time taken from the collar and cuffs.

Notwithstanding the particularity of these regulations they were evaded, as some particulars were omitted. Everybody has heard the story told of Sir Thomas Trowbridge, one of Nelson's favorite captains when a Lord of Admiralty. Some new regulations for uniforms had just been issued, and at the meeting of the board were discussed, when it was remarked they were so minute it would be impossible to evade them. "Why," said Trowbridge, "I can drive a horse and cart through them." And being challenged to do so, appeared at the next meeting of the board in a *white* cocked hat,[1] the color not having been prescribed. So in these regulations. While a round hat (meaning what is known as the stove-pipe hat) was allowed, it did not say, however, what shape it should be: it might be round at the top as well as round around the head; and I have seen officers on shore in Mahon and other Mediterranean ports, and even in the streets of Boston, on their return from a cruise, wearing long hair and an Andalusian hat, something the shape of the hats worn by the Puritans, surrounded by a gold band, causing them to look like brigands. Midshipmen were about the same time (1838) allowed to wear a gold band, which being a new thing they sported freely, and caused a newspaper to remark, "never had been seen so much hair and gold lace in the streets of Boston."

Shoulder-straps were not particularly described, and therefore, according to an officer's fancy, were embroidered around the edges, or with oak leaves, or were a simple strip of gold lace; and were generally used over the strap of the epaulet to confine it down when one was worn. The belts were sometimes embroidered with oak leaves and sometimes not, according to the taste of the wearer. Midshipmen were not confined as to the number of buttons in their jackets, and sometimes wore

[1] General Taylor, afterwards President of the United States, when on his Mexican campaign wore a white cocked hat, with square port-holes cut in it for ventilation. The hat is now among the treasures of the Historical Society of Pennsylvania, where I saw it in 1876.

eighteen of a side. Three buttons were the cuff ornament,—said to have originated in the whim of some old commodore to keep the youngsters from rubbing their sleeves across their nose. If so, the habit must have continued to later life, for we find in old uniforms the sleeves of officers of all ranks so ornamented; and as the captains had four buttons of large size on their cuffs, they must have been more addicted to the habit than the youngsters.

The present United States navy regulations require the full-dress pantaloons of all commissioned officers to have "a strip of heavy gold lace down the outer seam of the same width as that prescribed for their full-dress coat," which is rather vague, since the width of the lace on the collar and cuffs of the coat is widely different, and the full dress of the admiral and vice-admiral has no gold lace upon it, only embroidery.

The uniform of the marines for a long time and until 1839 was a green coat with white or buff facings, an undress frock-coat of the same color, a sword with white ivory cross hilt and brass scabbard, and white leather belts. In 1839 it was changed, to take effect from July 4, 1840, to blue with red facings.

Previous to 1830, and I believe some little time after, the sailors wore red waistcoats when in their mustering suit. A neat pair of stockings and light pumps completed his full-dress costume. The sailor's uniform in 1835–39 was a blue cloth jacket and trowsers and a white shirt, with a large blue nankeen collar and front, trimmed with rows of white tape. White trowsers were worn in warm weather. His head was protected by a tarpaulin or hat of white sennit in warm weather, which, covered with cloth and a coating of lampblack and beeswax, etc., known as "hat blacking," in cold weather, made it very heavy to wear, but an admirable protection against a sword-cut. The making of these hats was a constant and endless employment to the Jack tars, and more nautical dandyism was exhausted upon them than upon any other part of the uniform. They were also a pest to the first lieutenant, and the master's mate of the berth-deck, who had to find a place for them.

I know of but two portraits of our old sailors in naval costume extant, and these are old Dick Libby and Fred. Boyer, both quartermasters, well known to our older naval officers, whose portraits are preserved in the Naval Library and Institute of Boston, and were exhibited at the Centennial Exhibition. Libby, the type of a bluff, mahogany-faced old sea-dog, has on a blue jacket with the taped collar. The portrait was painted by C. O. Cole, in Portland, in 1834, where Dick was spending his savings after a cruise in the Mediterranean in the "Delaware," 74. Fred. Boyer is dressed in a white shirt with nankeen collar, and blue trowsers, and has in his hands a black tarpaulin hat. His portrait was painted by Flagg—a brother of the commander of that name—while Boyer was a quartermaster

on board the receiving-ship "Ohio," in Boston, somewhere about 1840–45. His character is best told by the description under his portrait,—"Twenty years in the navy. Never drunk on duty,—never sober on liberty." In *Stewart's Naval Magazine* for 1836 there is an admirable full-length wood-cut of a boatswain's mate of that date, whom the writer calls Jack Gromet, but it is a *nom de plume*. It is to be regretted that a portrait of Reuben James, who saved the life of Decatur, and that more portraits of "old salts" whose day of duty is over, have not been preserved in their characteristic dresses.

During the Mexican War, in 1846, Admiral Porter, then the first lieutenant of the steamer "Spitfire," Commander Tatnall, dressed the crew of that vessel in red flannel shirts instead of blue. The effect was very brilliant while they were new, but a few washings served to relegate them to underwear.

It is unnecessary, and would make this paper long and tedious, to follow all the numerous changes in the uniform of our navy since 1830. It is sufficient to glance at them. In 1841, Geo. E. Badger issued a general order regulating the uniform and dress in the navy, in which was included his celebrated order, "The hair of all persons belonging to the navy is to be kept short, and no part of the beard is to be worn long excepting the whiskers, which shall not descend more than one inch below the tip of the ear, and thence in a line towards the corners of the mouth." These were nicknamed "The Badger Whiskers," and caused one officer, who had a full beard under the chin but could raise no hair on the upper part of his face, to wittily remark, "That his whiskers began just where the regulation ended, and he would have to be contented with a smooth face." Fashion, however, proved more powerful than the regulation, and the order was never fully enforced. The surgeon's full dress and undress of these regulations had three stripes, one-and-a-half-inch wide, of gold lace around the upper part of the cuffs, which in Spanish ports often led to the surgeons being mistaken for colonels (that being the distinctive uniform of that grade in the Spanish army), and having the guard turned out and other honors paid them, while their commander with three or four buttons on his cuffs passed by unnoticed. It is believed this was the origin or cause of the introduction of distinctive bands of lace on the cuffs of officers of the staff and line of all grades.

The uniform prescribed for chaplains in the United States navy in 1830 was "a plain black coat, vest, and pantaloons to be worn over boots, or shoes, or black breeches, silk stockings with shoes, coat to have three black covered buttons under the pocket-flaps and on the cuffs." They were not allowed cocked hats, swords, or epaulets, but might wear a round hat with a rose-formed black silk cockade, or a blue cloth cap. In 1841 the chaplain's coat was "to be of dark blue cloth with rolling collar of black velvet," in other respects like the

undress coat of the lieutenants,—that is, it was to have a double row of nine bright gilt navy buttons on the breast, and buttons on the cuffs and shirts and under the pocket-flaps. The same regulation allowed them to wear cocked hats in full dress and swords. This uniform did not suit the clerical gentlemen, for in 1844, during the short reign of the Boston apothecary, David Henshaw, as Secretary, it was modified by his issuing the following economical order, which occasioned some laughter at the time: "Chaplains shall wear a black coat with a black velvet collar and the navy button now in use. (*They need not, however, provide themselves with new coats until those they now have are worn out.*)" The same order directed them to wear a black silk gown when performing religious services. Two months later the new Secretary, Mr. Mason, left it discretionary with them to wear "the black gown, a plain black coat, or the uniform coat prescribed." The regulations of 1852 required the chaplain's coat to be single-breasted, with one row of nine large navy buttons in front. In the regulations of 1866 shoulder-straps were added to their coats of dark blue cloth bordered with gold embroidery, and having on their ends gold or silver leaves showing their relative army rank, and in the centre a silver cross to designate their profession. The regulations of 1869 and 1876 make no changes in the chaplain's uniform. There is now (1880) a bill before Congress to simplify and alter the chaplain's uniform. Should it pass, it will be the first instance of a uniform in our navy being the subject of legal enactment. Perhaps if this uniform was regulated by law instead of regulation, it would not be the subject of such frequent changes.

In 1847, Secretary Mason ordered the letters "P.D." and "M.D.," in silver Old English letters, added to the epaulets and shoulder-straps of medical officers and pursers. These marks, however, like the club of Æsculapius and cornucopia, were thought too professional, and were soon discontinued, as they led to endless small witticisms about "Poor Devils," "Pony Down," "More Drugs," "Mad Dog," etc. The introduction of Engineers into the service caused further changes and additions to the uniform.

In 1852, Secretary Graham issued an elaborate order defining the naval uniform, fully illustrated with colored plates. These regulations did away with embroidery, and substituted gold lace for the collars and cuffs of all the line-officers, while it was retained on the collars and cuffs of staff-officers. The buttons, which, since 1830, had for a device an eagle perched on the stock of a foul anchor, were now changed, and the eagle made to rest on the shank of the anchor, while embroidered devices for the front of the caps replaced the gold lace bands.

In 1866 the introduction of new grades into all branches of the navy made a reorganization of the uniform necessary, and Secretary Welles issued new general regulations on the subject, which included full regulations for a uniform for petty officers and seamen, prescribing

various distinguishing marks for the former. "The quarter-deck cap," which had a brief existence during the war, will be remembered by many officers now living. An uglier head-covering could not have been devised.

When the rank of admiral was introduced into the navy, Admiral Farragut, for whom the honor was created, was consulted as to the uniform, and suggested for his sleeve-mark a gold embroidered star, with a representation of his favorite ship, the "Hartford," in silver in the centre. His wishes were complied with, but it is said he was much surprised when there was added to the cuffs of the full dress a triple row of embroidered oak leaves and acorns, which carried the embroidery nearly up to his elbow. The vice-admiral's full-dress uniform has two rows of the embroidery, and a smaller golden star without the "Hartford" in the centre; and the rear-admiral's had one row of the embroidery. In undress, strips of wide gold lace take the place of this embroidery. The present full dress of the rear-admirals has lace on the cuffs instead of embroidery.

In 1869 a modification of these regulations, fully illustrated, was issued, and for the first time a systematic regulation for the embroidery of the sword belts ordered. The cap ornament was also made the same for all commissioned officers.

The Navy Regulations for 1876 contain in the Appendix substantially the regulations of 1869 in regard to uniforms, which are the same to-day, subject to such changes as have been specially made in subsequent general orders.

In November, 1878, quite a tempest was raised by the premature publication of a naval general order making changes in the uniform, and there was so much feeling on the subject that the order was suppressed, and never issued. A useful service frock trimmed with black braid was authorized in 1877.

The origin of this service uniform sack-coat of the United States navy is this. It was first devised at and authorized to be worn by the officers of the United States Naval Academy at Annapolis during the administration of Rear-Admiral C. R. P. Rodgers, and officers leaving the Academy for sea service and carrying these coats with them, were continually asking permission to wear them. Three officers of rank meeting in the room of one of the bureau offices at the Department at the beginning of 1877, and Rear-Admiral Rodgers chancing to come in, he was asked either to have the coat abolished at the Academy or introduced under certain restrictions as to use in the general service. The result of the conversation which ensued was a petition to the Secretary of the Navy, signed by the four officers, for its introduction into the general service, which was responded to by the order of January 16, 1877.

GEO. HENRY PREBLE.

THE DUTIES OF STAFF-OFFICERS.

[The following paper was read by Brevet Major J. P. Sanger, U.S.A., Captain First Artillery, before the staff of the Eleventh Brigade, National Guard, New York, at their headquarters in Brooklyn, April 6, 1880. It contains so much that is valuable to officers of the militia and national guard throughout the country, many of whom are numbered among the readers of THE UNITED SERVICE, that we have obtained Major Sanger's permission to reproduce it here.—EDS.]

To the student of foreign staff organizations our own seems somewhat anomalous and not altogether suited to the efficient and economical administration of the military service. We run too much to specialties, and are thus over-organized. Each branch is in a measure independent of the other branches. No proper discrimination is made between military and administrative staff functions, and by calling things by their wrong names we have finally fallen into the error of believing what in all other armies has been proved to be fallacious and impracticable.

The argument usually adopted by those who defend our system as against that of European armies is one which simply begs the whole question, and leaves unanswered every solid objection against it.

It is, "that foreign organizations are not adapted to our form of government and the traditions of our army."

On the continent of Europe every form of government, from an absolute despotism to the purest democracy, exists, and yet there is a singular uniformity in the organization of the different armies.

The fact is, that questions of organization do not and cannot be made to depend, within reasonable limits, on forms of government. Army organization results from principles which are older than *any* government now extant, and which extend into the region of character, and are founded on a knowledge of human nature.

The military system of a country—by which I mean the method of raising and maintaining the military forces—*does* depend on the form of government, and on many other material circumstances peculiar to the country and the people, and this we see wherever we carry our investigations. In this country and England we have small regular armies and a reserve of militia and volunteers. Why? Because we do not fear sudden invasions, and when the war is popular the government may safely rely on the patriotism, the wealth, and the intelligence of

the people, and is not, therefore, obliged to maintain a large standing army.

Our system has enabled us to carry on prolonged wars and to win victories, and is the only system the people will tolerate.

But does this fact constitute an argument in favor of any special *organization?*

Does the fact that the regular army is small, and scattered from one end of the continent to the other; that the militia are imperfectly armed, equipped, and instructed, and the volunteers absolutely out of existence; that the President of the United States is elected for four years, and a Senator for six, involve a single logical deduction why the quartermaster, commissary, and pay departments should be separated instead of united, or why a regiment should have one battalion instead of three, or a battery six guns instead of eight? On the contrary, neither of these facts is contained in the others at all, or has any logical connection with them.

Another argument on the same side is that our army, in time of war, is composed of raw troops, and that it is a volunteer army, and that principles which would determine the organization and management of a force of professional soldiers cannot be applied to an army thus constituted.

The answer to this is, that our volunteers, after a short time, are regulars in all but name, and as such are capable of being and doing all that is expected of other soldiers.

The army that swept through the valley of the Shenandoah, that fought at Gettysburg, in the Wilderness, and at Appomattox, was to all intents a regular army, and nothing else, and it is mere sophistry to call it by any other name, or try to prove it so.

Having determined the size of our army, and how it shall be raised and maintained, as questions intimately connected with the political law of the country, and which belong to the domain of statesmanship, what objection can there be to adopting as a guide, in organizing and administering this force, the methods adopted in the first military nations of the world? We have learned from Europe how to govern and police our great cities, and how to manage large business enterprises; we follow the example of her institutions of learning, both civil and military, and they in turn have learned from us, but when we come to discuss principles of army organization and administration, we say no. Although we have been obliged to imitate you in many things, and although nearly all we know about military science has come to us from foreign sources, we will not admit it. Your system is good enough for you, but it is not adapted to us. It is true that all other nations find that they can apply the same principles, but we cannot, we are a nation *sui generis*, and our government is, if anything, a little more so. This, of course, is the greatest folly imaginable, and unwor-

thy of a people who are as quick to profit by the experience and investigations of others as we are.

Besides, these are not the true reasons why every attempt to remodel the army according to modern ideas of organization and administration have failed. The *true* reasons are, that the changes necessary to a complete reorganization would affect the interests of too many influential persons, who are clever enough to provide arguments which, by flattering our individuality as a nation, are continually and successfully diverting attention from the true merits of the case.

Having thus briefly explained why we differ, I now propose to show how we differ, and will then proceed to a discussion of what we are, and as we are, what we ought to do as staff-officers.

With the exception of our general officers, we have no "general staff" in our army, as these words are understood and applied in Europe.

The general staff of foreign armies composes a body of officers from the rank of lieutenant to general, selected from the line of the army, and especially instructed in their duties as aides. This instruction is divided into two parts, viz., instruction in a staff school, to which lieutenants are sent when first selected, and instruction in the staff corps, and with the different arms of the service, until the aspirant is thoroughly informed in regard to all the military duties of the profession.

He is then well qualified to be, as has been most aptly said, the eyes, the ears, and, if necessary, the *mouth-piece* of the general he serves.

In Germany, for instance, staff-officers are taken from the graduates of the war academy, to which all officers of good character and with the necessary aptness are eligible.[1] "After returning to their regiments, ten or twelve of the most proficient are transferred to another arm of service for a period of six months. If they acquit themselves well, they are at the expiration of this term summoned to Berlin, where, on probation, they are assigned to staff duty."

"At the end of this period they are again sent back to their regiments; shortly after which those who are regarded as qualified are named captains of the staff, and are sent into the army, to serve three years as staff-officers. They are then sent back to the line, and required to command a "company, a battery, or squadron before being promoted to the grade of major. Only the grades of field-officer and above are permanent; the promotion in these grades being by seniority. In order, however, to keep them in sympathy with the troops, staff-officers, before each promotion, are required to return to the line, and to hold for a year a command corresponding to their rank." When not serving with the troops as herein described, the staff-officers of Germany are engaged in collecting statistics, making military surveys and maps, and

[1] See Upton's Armies of Europe and Asia.

in arranging and systematizing the information thus gathered. Their investigations cover all purely military questions concerning their own and other countries, and embrace precise knowledge of all foreign armies, and every material fact which would be useful to the German army if engaged in war with any other power on any possible theatre of war.

Every foot of European ground has been surveyed and mapped; all lines of communication, railways, rivers, bases of operations, in fact, every detail of all probable places of campaigns has been worked up, and the necessary information arranged for easy reference.

The mobilization of the army, and the best and surest way of concentrating and supplying it at any desired point, are also subjects thoroughly investigated and definitely determined by the general staff.

Four general staff-officers are usually assigned to the staff of a general commanding an army corps, and one to the staff of a division commander, and their sole duty in time of war is to collect information which will enable the general to march and fight his troops to the greatest advantage. They are engaged simply with the *military* functions of their chief, such as the determination of lines of battle, routes of march, camps, and the reconnoissances which such operations render necessary.

This brief description of the selection, education, and duties of the German staff is but the type of the methods which generally prevail in all European armies in appointing staff-officers. The general staff is the school from which the generals who command are usually chosen, although not always, and you can readily see how thoroughly this training prepares them for their high positions. I would like to explain something of the "staff tours" of foreign armies, which are made annually, and during which staff-officers, by means of a skeleton force, fight problematical battles, of which they render reports as complete as they would were the campaign a reality, but time will not admit, and we must pass over this most interesting feature of staff training.

This account makes plain, I think, one point of difference between our system and that of Europe in the organization of the staff. We have no general staff such as is here described, nor do our officers receive the special training which is universally considered requisite in a general staff-officer.

A general officer appointed from the general staff of a foreign army is usually conversant with all the details of command and service. He knows from actual experience what the infantry can do, what the cavalry can do, and what the artillery can do, either singly, when paired together, or when combined, and the fact that he has this knowledge is a fact which inspires confidence in his subordinate commanders and renders them obedient to his will.

Associated with these officers of the general staff, on the staff of a

corps or division commander, are adjutants, engineers, and artillery officers, and these constitute the staff military, as distinguished from the staff administrative. A brigade commander has simply an adjutant.

The adjutants perform duties which with us devolve on our adjutant-generals, while the functions of the engineers, the artillery, the commander of train, the provost-marshal, and others are indicated by their titles and nature of service.

The "administrative staff" is composed of intendance officers, whose duties combine those of supply, transportation, and pay; medical officers and judge-advocates are special, while the duties which in our army fall to signal-officers, in Europe devolve on the engineers. All the officers herein enumerated, military and administrative, are under the immediate supervision of the chief of staff (who is a general staff-officer), except those of the artillery and engineers, who receive their orders directly from the corps or division commander, and who are *ex-officio* members of the staff. How simple and yet how perfect is this arrangement of the duties of the staff!

Instead of being divided among ten different departments, as in our army, they are consolidated in three, viz., the intendance, the medical, the judge-advocate's department, and these through their chiefs are under the most perfect control.

Instead of dealing with ten officers, all of whom are independent of each other, and between whom there may be no co-operation, the chief of staff consults with but three, thus reducing to a minimum the serious questions which, through man's infirmities, are continually arising, and eliminating, as far as possible, the friction and the uncertainty which belong to the transmission and execution of military orders.

The *personnel* of the different administrative departments of foreign armies is as thoroughly instructed as the military staff, and is as complete in all the various grades as the line of the army, and the evil of making details from the fighting force to which we are obliged to resort, when we take the field, is unheard of. Every branch of the service is as a rule complete in itself, and perfectly trained for the performance of its special duties.

The organization and functions of our own staff are, I presume, well understood by the gentlemen here present, but I cannot make the comparison which I have undertaken as complete as it should be, even in this rather incomplete summary, without reverting somewhat to details with which you are all more or less familiar.

Apart from the line, consisting of the infantry, cavalry, and artillery, the forces of our army constitute eleven different specialties, all of which claim to belong to the staff of the army. These are the adjutant-general's department, inspector-general's department, judge-advocate's,

quartermaster's, subsistence, medical, and pay departments, the engineers, ordnance, and signal corps, and last, but by no means least, the post chaplains. "A highly-trained body of officers of various grades, the most important and necessary of staff corps, is the one blank in our much-organized service;" we have no "general staff" such as I have described as a feature of foreign armies.

Of the above enumerated specialties, but three can be properly considered as belonging to the *military* staff, viz., the adjutant-general's, inspector-general's, and engineers; the quartermaster's department, commissary department, and ordnance department constitute the administrative staff, and are chiefly engaged in providing for the wants of the army; while the medical department, the judge-advocate's department, signal corps, and the chaplains occupy an intermediate position, and in a measure partake of the nature of both. This bare enumeration of the branches of the staff is sufficient to explain the great difference between our staff organization and that of foreign armies, and will suggest, and in a measure explain, the difficulties often experienced by "those in command of arranging the details of the different services and securing their combined action." If now you consider that, with the exception of the ordnance department, all the administrative branches are entirely dependent on the line of the army for the necessary subaltern officers and enlisted men to make them thoroughly efficient, I think you will fully understand *how* we differ from other armies in which the entire staff, military and administrative, is thoroughly organized.

These differences have been the subject of continual discussion among our officers; plans of reorganization have often been proposed but as often rejected, and there is every reason to believe that the next war will be conducted very much like the last war, so far as the staff is concerned. Let us, therefore, proceed to a general consideration of what we are expected to do as staff-officers.

The aides of a general officer are attached to his person (in contradistinction to the other officers of the staff, who are assigned to the brigade, division, or corps), and compose the inner circle of his military family.

They are entitled to his confidence, and in return it should be their sole endeavor to prove their loyalty to his interests.

The intimacy of this relation naturally tends towards greater freedom of intercourse than is generally observed between an officer and his subalterns, and, when exercised with discretion, creates ties of affection and respect which only end with life itself.

The aide is the companion of his general at all times, and has access to his privacy when others may not have it. He sees his commander under all the vicissitudes of what perhaps may be great provocations or great temptations; he listens to the unguarded exclamations of irrita-

bility, of excitement or anger, or to the indiscretion of commendation lavishly and unwisely bestowed; he becomes the custodian of personal and state secrets, and often knows full well the views of his general in regard to many questions concerning which military men are not expected to hold opinions at all.

In the daily life of the camp or garrison he finally gains an insight into all the affairs which surround his chief, whose life thus becomes in a measure a part of his own. Having been specially chosen for the position, and having freely accepted in good faith, the first great duty of the aide-de-camp is to school himself to discretion and secrecy, so far as the personal affairs of his general are concerned.

He should never know anything about his general which he thinks may not be given to the public, and should really conduct himself in all sincerity as though he did not know, instead of playing the part of confidant, and thus subjecting himself to the "pumping" which is sure to follow, and which he cannot well avoid without great discourtesy. With this side of the life of an aide-de-camp the officers of the National Guard are not probably very familiar, nevertheless they must in a measure become the associates of their generals, and no matter to what extent, are in honor bound by these rules.

The personal affairs of a general officer are therefore matters of solicitude to his aides, who should always be willing to yield a cheerful and ready assistance whenever they see that their assistance is required. The purely military duties of an aide have been already indicated by what has been said of their education in foreign armies. He should be as well qualified to assist his general in a professional capacity as he is in a personal way, and to this end he must needs apply himself diligently.

It is expected, as a matter of course, that he will understand the tactics of the three arms of service, military topography, geography, and the study of maps. He should be a daring rider, and in the discharge of his duties should cultivate the presence of mind and *sang-froid* which no ordinary danger or excitement can disturb.

A remarkable instance of this is related of Captain Light, of the staff of the Duke of Wellington, whose nephew, General Light, of the English artillery, I met in India in the winter of 1876, and who fully corroborated this story:

"In 1814, in the vicinity of Vic-en-Begorre, the French had posted one of their bodies of rear-guards on a hill, the end of which abutted on the high-road, the slope being clothed with trees and defended by skirmishers. Lord Wellington was desirous to know whether a small or large force thus barred his way, but all who endeavored to ascertain the fact were stopped by the fire of the enemy. At last Captain William Light, distinguished by the variety of his attainments as artist, musician, mechanist, seaman, and soldier, made the trial. He rode for-

ward, as if he would force his way through the French skirmishers, but, when in the wood, dropped his reins, and leaned back as if badly wounded. His horse appeared to canter wildly along the front of the enemy's light troops, and they, thinking him mortally hurt, ceased their fire, and took no further notice. He thus passed unobserved through the wood to the other side of the hill, where there were no skirmishers, and ascending to the open summit above, put spurs to his horse and galloped along the French line, counting the regiments as he passed. His sudden appearance, his blue undress, his daring confidence, and his speed made the French doubt if he was an enemy, and a few shots only were discharged, while he, dashing down the opposite declivity, broke from the rear through the very line of skirmishers whose fire he had first essayed in front. Reaching the spot where Lord Wellington stood, he told him there were but five battalions on the hill."[3]

In consequence of this Lord Wellington advanced his line, routed the French, and was soon master of the position.

This example illustrates one of the most important functions of the aide-de-camp, which is to obtain correct information for his general, on which he can rely, and on the strength of which he can make his plans, and no personal risk should prevent an aide from the attainment of this object.

In fact, no feature of military operations devolving on a staff-officer is more important than a reconnoissance, either secret or open. An aide, intrusted with this duty, should remember that "the best conducted reconnoissance is that which brings back the greatest amount of useful information. An irresolute officer will fear to expose his detachment or his person, and at the last moment, either from negligence or sometimes even from fear, will not approach sufficiently near, and then he will make a false report, assuredly more dangerous than the absence of all information concerning the enemy."

A hundred examples could be given to prove the importance of boldness in reconnoissances, but time will not permit us to indulge in this most fascinating relaxation.

For the rest, an aide should be a good judge of distances, should understand signaling, and should always be provided with the "kit" necessary to enable him to perform his duties without embarrassment.

If with all this he combines the courteous bearing which indicates the gentleman, and than which nothing is more indispensably necessary to the successful performance of his varied and intricate duties, he will not only add largely to his own popularity and respect, but will do as much as he can in any other way to secure popularity and respect for his chief. There are, no doubt, many officers present who will bear me out in this assertion, and who can recall division and corps headquarters during the last war where they had occasion to make this comparison.

[3] Napier's Peninsular War.

Next in order on the staff are the adjutant-general and inspector-general, whose duties are also confidential in a great measure, but who belong to the corps, division, and brigade staff, in contradistinction to the aides, who are of the personal staff.

The adjutant-general's department is the department of military orders and correspondence.

The adjutant-general is the channel of communication between the general and those under his command, and all orders are issued by him. A pernicious custom has grown up of late years, which permits the heads of other staff departments to issue orders in their own name, and to correspond with their subordinates, without recognizing the commanders of the troops with which such subordinates are serving, concerncerning the operation of their specialties. Imagine, if you please, an inspector of rifle-practice issuing orders from his office to the colonel of a regiment as to the manner of conducting rifle-practice. This officer is undoubtedly the proper person to make suggestions, and to formulate regulations which will promote the efficacy of his department, but the orders conveying this information and establishing regulations for the troops can only have force, properly speaking, when promulgated by the adjutant-general, or by an officer acting in his place, through the regular official channels, and any other course only excites distrust and bad feeling.

This is a subject to which your attention should be especially directed, and staff-officers should remember that, except when they act under orders, they have no direct command over troops; they are the organs through which the respective commanders or chiefs communicate orders and instructions.

This, of course, does not refer to the correspondence between the head of a bureau and the officers *directly* under him, or to the orders which he may send them referring to the performance of their special duties.

To the adjutant-general's department also belong the special and periodical returns and reports of troops, required for the information of the general, and by means of which he verifies all estimates and requisitions for stores, clothing, camp and garrison equipage, rations and ammunition, hospital accommodations and transportation. With this statement before us, it is not difficult to understand what is expected of an adjutant-general.

He should be thoroughly informed of all the details of service and the proper methods of transacting military business.

He should make it his duty to master every question which comes before him for presentation to his general, in the same way that a judge prepares his opinion, so that when he submits it for decision he has looked at both sides of the case, and no unnecessary time need be consumed in analyzing the facts, or hunting up the laws, regulations, or orders which bear upon it.

As he is charged with the orders and correspondence of his commander, he should cultivate the courtesy, brevity, and clearness of style for which the best military composition has been remarkable, and should endeavor to reduce the clerical duties of his office to the minimum.

There have been officers in our service noted for red-tape, who delighted in official correspondence, and who surrounded their affairs with mystery, as though they were in the possession of important secrets. Nothing can be more unwise or unnecessary, for whereas system is absolutely essential to the efficient management of an adjutant's office, and it is generally important that proper forms be observed, and that an adjutant-general should be discreet, the BEST adjutant-general is he who makes the quick and intelligent dispatch of all business his aim, and who knows when to overlook the informalities which interfere with that.

As the adjutant-general takes the field with the troops, he should be at all times prepared for such an emergency, and should have his field office in perfect order.

A single book of entry, with several manifold writers and a small supply of blanks, are generally all that is necessary. In addition to the duties of his office, the adjutant-general also acts as an aide in the field, and frequently performs the duties of inspector-general.

The inspector-general, by which I mean the inspector of an army or army corps, fills the next most important position in the hierarchy of the staff, and you all understand fully the nature of his duties. "It is a mistake, however, to impose too much of the mere details of ordinary inspections upon such officers, whose functions were originally designed to be of a much higher order," and who should be given ample time to perform them.

The stated inspection of troops made by division and brigade inspectors and by commanding officers, and verified by their immediate superiors, usually suffices to determine their efficiency, and the inspector-general should not be called on for this purpose except at reasonably long intervals. It should be his duty "to verify the condition of all branches of the service, not only as to their military and administrative efficiency, but to their harmonious and economical working;" upon these reports the general commanding is able to adjust their duties by appropriate orders or regulations.

Before making an inspection an inspector should be duly authorized by a written order, a copy of which is generally mailed to the officer concerned, unless it be the intention to give no notice.

On arriving at the station, post, or command, the inspector presents the order under which he is acting, and then proceeds with his inspection, which should, if general, include police, discipline, instruction, service, and administration. Nothing should be too minute for his notice, and he should have a clear and distinct idea of the nature of his

report, that is, whether, if it be of troops, the drill, for example, is from bad to indifferent, from fair to good, or from good to excellent, and so on, and these remarks are specially pertinent to the inspections made by commanding officers.

The best characteristic of an inspector next to thoroughness is impartiality and absolute reticence. He should remember that it is his duty simply to examine and report facts, and that if he forms opinions they are to be expressed *first* to his general, or the officer who ordered the inspection. He should, therefore, be very guarded, and should remember that his views may not be approved at headquarters, and that he is in honor bound to protect the confidence of his chief, who is alone responsible for the good order and discipline of the command. The usual way is to make an extract from the report of an inspector and send it to the troops or officer concerned with such remarks as the general may dictate, and this is done through the adjutant-general, to whom all explanations are sent in reply.

The duties of the quartermaster, commissary, and pay departments of our army are purely administrative, and the officers, although liable to court-martial service, are called on for no duty, and exercise no command, outside of their own departments.

The status of the engineers and ordnance is similar.

In all armies except ours ordnance duties are performed by the artillery, and the engineers compose an arm of the service formed into regiments as are other troops.

In discussing the duties of the administrative staff it is well to understand fully what is meant by the term administration as we use it. Administration in its most comprehensive sense may be defined as "the just direction and economical application or expenditure of the several sums of money appropriated by Congress for the army or military defense of the country on land. These objects are enforced by a good system of responsibility for the several paying or administrative departments or officers."

An important though minor branch of administration is that which pertains to the interior economy of corps, troops, etc., and which refers to the *details* of the administrative service, such as the regularity of payments of troops, regularity in issues and supplies of subsistence, clothing, and all other authorized allowances, and finally the quality of those articles.

In these definitions you have clearly set forth in general terms an indication of the administrative duties and responsibilities of quartermasters, commissaries, paymasters, medical officers, and officers of the ordnance department and of the engineers as disbursing officers, and of all other officers charged with disbursements. Just direction, economy, regularity, and quality are to administrative officers what police discipline, instruction, and service are to officers whose duties are

more essentially military, and no officer of the administrative staff can ever achieve even a respectable reputation in his specialty who does not keep these ideas before him and shape his conduct accordingly. Few officers attain excellence in all three particulars, and it is the harmonious and skillful blending of the characteristics which these words are meant to signify which distinguishes the accomplished administrative staff-officer from him who is stupid, lazy, or indifferent; who surrounds himself with a multitude of well-paid employés, and who turns over to some industrious clerk the general management of his affairs.

It is impossible in the scope of a paper like this to enter upon a discussion of the details of the administrative staff, nor, in fact, is it necessary.

No man can become familiar with details who does not perform the duties, and a mere repetition of those, or of the regulations under which they are executed, would be a waste of time. Sound general principles are far more important to officers of the National Guard, for the circumstances under which you act are so different from those which attend the Regular service that details must depend in a great measure upon what you are required to do. The general principles, however, are the same in all cases, and for that reason are enumerated. To the quartermaster belongs the supply of all clothing, camp and garrison equipage, and stores, as well as the means of transportation, etc., and the estimates for these can be prepared by any officer who is furnished with the requisite data. For example, knowing that the allowance of forage for one horse is twelve pounds of oats and fourteen pounds of hay daily, it is not a difficult problem to determine the amount required for ten thousand horses; and knowing that a six-mule army wagon will transport about four thousand five hundred pounds gross weight, it is just as easy to determine how many wagons are needed for the transportation of that amount of forage.

It is the same with all the rest of the supplies of an army, hospital accommodations, and pay. It is consequently the duty of an officer of a supply department to familiarize himself with the proper allowance for men and animals, and learn to judge of the quality of public stores. His official success will depend, as I have said, on his business capacity and a conscientious discharge of his duty in an economical and regular manner.

The education and employment of thousands of our business men especially qualifies them for the position of administrative staff-officers, as our last war proved, and there should be no lack of such men in the ranks of the National Guard, and if they will keep in mind the general principles recited they need not fear to undertake the duties of quartermasters, commissaries, or paymasters.

The bureau of military justice and the signal corps complete the staff branches of the service to which I shall refer.

As intimately connected with the discipline of the army, the judge-advocate's department is one which should be managed with the greatest circumspection and with special regard to uniformity in punishments.

This is absolutely necessary in our army, because the code of discipline leaves so much to the discretion of military tribunals.

This is not always exercised with benefit to the service, and results in wide differences in the sentences awarded by courts of the same military command, and a consequent injury to discipline. For example, the term of confinement for desertion in time of peace is entirely optional with a court-martial, in time of war the punishment extends to the death-penalty.

If you will examine the records of the judge-advocate's department, you will undoubtedly find sentences for recent desertions varying from six months to four years, and possibly longer terms.

This variation is due to the variable character of the courts which try the cases. One set of officers will act as though no punishment were too severe, another as though no severity was necessary, and hence it sometimes happens that, when court-martial sentences for the same offences are compared together, they seem neither just nor equitable, and not even sensible.

As an adviser, whose duty it is to acquaint himself with the merits of every case to be submitted to the general for his action, it is within the power of the judge-advocate at headquarters to remedy, in a great measure, this and other defects in our code of military justice and the practice of our courts.

But he can only hope to accomplish this by adopting a system, and by thoroughly understanding the real significance of military crimes, misdemeanors, and irregularities, and fixing in his own mind, after long study and reflection, the degree and kind of punishment which they deserve. Extenuating or aggravated circumstances will sometimes suggest departures from established rules, but it is not difficult to reach a decision which will preserve the adopted scale of punishment, provided the judge-advocate has clear and distinct notions of his duties.

The latitude given to courts-martial by the vagueness of military law and the customs of service, except in certain well-defined cases, imparts to such tribunals more of the character of courts of equity than of justice, and hence the importance of regulating their judgments. I am disposed to lay considerable stress upon this point, because I am satisfied that it is important, and that its importance is not fully or generally appreciated.

There is another question to which the attention of judge-advocates should be directed, and that is the growing tendency towards introducing into the practice of courts-martial the forms and customs of civil courts.

The "fundamental principle of a code of military punishment is

the enforcement of prompt obedience by prompt punishment," and all delays, such as are common to trials before courts of civil jurisdiction, are antagonistic to the very purpose for which military courts are established. It has been justly said that "military law is founded upon the idea of a departure from the civil law, and it is a great error to suffer it to become a sacrifice to principles of civil jurisprudence at variance with its object."[3]

A limit exists somewhere, "a limit beyond which it should be possible to say that military law has its own common law, and is not controlled by the common law of another system."[3] In other words, military courts should be governed by rules and customs, which, if observed, will best promote the discipline of an army, and should, as far as practicable, reject the legal quibbling, the sophistry, and the sentiment which are sometimes used to distract juries and judges and secure a favorable verdict. Uniformity and promptness of punishment, therefore, when punishment is awarded, should be the chief aim of a judge-advocate in the revision or conduct of court-martial cases.

The details of the judge-advocate department, like those of the other departments, can only be mastered by study and experience, and for lack of time must be passed over.

The signal corps completes the list of staff bureaus. From a military stand-point the duties of this department in time of peace are of no considerable prominence, and hence they are somewhat undervalued as a part of our military education. As a matter of fact, they are of very great importance, and ought to be thoroughly understood by all officers of the military staff.

We all understand in a general way what is meant by a signal code, and that its use is to convey information by means of signs or symbols. This is done in an endless variety of ways, and, including telegraphy, answers all the purposes of rapid communication.

There is nothing new in the idea of signaling; all nations have resorted to it, and great ingenuity has been displayed in the preparation of different codes.

In time of peace a signal-officer should acquaint himself as far as possible with a great variety of codes, so as to be able to invent and discover or read other codes. Study and practice will facilitate this, and enable those who have a natural aptitude to reach great perfection.

An interesting inquiry here suggests itself as to how far we will be able to rely on signaling to the exclusion of the time-honored custom of transmitting messages by word of mouth, or in writing.

At the outset of the late war, when it became customary to use the telegraph in communicating important messages, our opponents were in the habit of cutting the wires and seizing the stations.

For the folly of this proceeding they shortly substituted the more

[3] Col. G. N. Lieber in Journal of Military Service Institution, vol. i. No. 1.

sensible plan of tapping the wires and reading our messages, which they frequently answered, and thus led us into difficulty. In fact, it is not easy to say how far a commander will be justified in relying on any signal code—telegraphic or otherwise—when in the presence of a bold, enterprising enemy, and at all events he will be compelled to conduct such operations with the greatest secrecy. The danger of having messages intercepted only calls for renewed exertions on the part of signal-officers to prevent being outwitted, and to stimulate their ingenuity in preparing ciphers, which, without being too intricate for rapid communication, will be sufficiently puzzling to thwart or mislead the enemy.

This presentation of the case is not intended to detract from the acknowledged usefulness of the signal service in time of active operations, but, on the contrary, adds increased importance to the selection and instruction of signal-officers, and to the character of the duties which is certain to devolve on them.

In every company, battery, and troop the non-commissioned officers at least should be required to learn signaling, and all enlisted men of a regiment who understand telegraphy should be placed at the disposal of the signal-officer and thoroughly instructed in their duties. No one can tell when the safety of a command or the success of a battle may depend entirely on the skill with which messages are sent and received, and, as an auxiliary in the conduct of military operations, nothing seems to me more important.

Having thus briefly outlined the responsibilities, and remarked on the principles which are to be observed in the execution of staff duties in general, I will now endeavor to make a practical application of the principles we have discussed to the staff of the National Guard.

I regret very much that I am not more familiar with the operations of the militia laws and the peculiarities of the National Guard system. My ignorance on these points has been a source of embarrassment to the preparation of this paper, which I will not attempt to explain further than to say that it has been very great.

It renders impossible such a discussion of details and application of principles as the case demands, and forces the writer into dealing with "glittering generalities" and all the uncertainty which such a discussion involves.

I proceed, however, upon the assumption that the staff of the National Guard is modeled on that of the Regular Army, and that its duties are as similar as the differences between the object, organization, and scope of the two services will permit.

As I understand it, the *object* of the National Guard is twofold.

In the first place, it is maintained as a final sanction to the municipal law in protecting the lives and property of the citizens of your great Commonwealth; and, secondly, as a military school for the training of your quota of the grand reserve of the national army.

Its organization embraces all the tactical and administrative units necessary in the formation of brigades and divisions, which are distributed throughout the State, under the orders of the Governor as commander and chief.

The *scope* of your operations, under ordinary circumstances, is limited by the boundaries of your State, beyond which you are not expected to go, unless called into the service of the national government. Bearing these things in mind, what are your duties?

I think no one who is familiar with its history will question the usefulness or importance of the National Guard.

It certainly has spoken and can speak for itself, but is it what it should be?

Are you, as officers, sufficiently impressed with your responsibilities? and do you try to impress upon those below you in rank the necessity of thorough instruction and discipline?

If you cannot answer these questions in the affirmative, then you have not fulfilled your first duty as staff-officers.

There are officers in the National Guard, I am informed, who hold their positions for purely selfish purposes, who delight in gorgeous uniforms and parades, and are faithful in their attendance whenever there is a public display, but who are otherwise of but little account.

If there are such, I am happy to say I have not met them in the Eleventh Brigade, nor do I wish to meet them in any brigade, for it is just such officers who bring the whole militia system into disrepute, and who occasion all the slighting remarks with which ill-natured persons try to ridicule what they term "bouquet soldiers."

The position of a military officer, no matter in what organization he may serve, is a highly respectable connection, provided the man does not "rattle in his place," but fills it.

The American people are quick to discern frauds in all the walks of life: they are not easily deceived; the public judgment about men and things is generally correct, and it is surprising how soon the comparison is made, and each assigned to his appropriate niche, above or below the average. If the National Guard does not stand as high as it should, you may rest assured that it is because it does not deserve to, and the fault lies with the officers, and of the officers none are more directly responsible than those of the staff.

The staff must set the example, they must be in earnest, they must be soldiers, if they wish to see soldiers in the ranks; and they never will see soldiers in the ranks unless they are as faithful and true in the discharge of their public duties, as officers, as they are in their ordinary avocations as citizens. It is within your power to set the fashion, and to induce others to follow it. Make the National Guard respected by a soldierly attention to duty, and by publicly exposing those who merely use it as a plaything or a convenience. Let the play-soldiers be known,

and let them be ridiculed, not first by those outside of the corps, but by yourselves, and let every one else follow your example.

Let every officer of the staff, from the general down, first ascertain what he is expected to do, and then let him do it as well as he can, and in return exact the most rigid compliance with this rule, from every officer and man over whom he has any control, or who is in anywise responsible to him. Let it be once understood that there is to be no trifling in matters of duty, and you will be surprised to find how soon all trifling will cease. I have never known an officer who, if he was true to himself, did not win the respect of those about him, and for all military men it is a golden rule.

I am aware that although many of you are well-tried soldiers, "soldiering" is not your profession; that you receive but little, if any, material aid from the government, and that your business demands are great and that you have many obstacles to overcome. But even if all this be admitted, it does not alter the case; in fact, it only renders what I say more imperative. An officer who meets his men every day, who is, as it were, *always* on duty, has ample opportunity to repair the damage due to occasional remissness or carelessness.

But with you it is just the reverse; your military duties are exceptional and infrequent, and for that reason should always be thoroughly and strictly performed for the sake of example, if nothing more.

In this way you will not only exercise a good influence over those about you, but you will soon acquire habits of mind and conduct which are invaluable to an officer, and which will prepare you for higher positions and greater responsibilities. As militia, the scope of your operations is limited to the State, and if you are called out it is generally to repress internal disorders, such as riots, strikes, etc.

With this idea before us, it is certainly not a very difficult matter to describe your duties, which, for the sake of clearness, we will classify as duties of preparation and duties of execution. And first, as to preparation. Situated as you are, the first great duty is to prepare for any emergency which may arise in either New York, Brooklyn, or the adjoining cities. And the first step is the preparation of suitable maps, a duty which properly devolves on the aides, and one of the very highest value.

These maps should be drawn to a scale of not less than twelve inches to the mile, and should contain nothing except information necessary to military operations in fighting mobs.

Among other important data, such as the names of the streets, public parks, street railroads, railroad depots, and ferry landings, these maps should show the character of every block, the number of inhabitants per square yard, their temper, nationality, and occupations, and, as far as practicable, every material circumstance which would enable you to form a reasonable prediction as to what opposition is to be ex-

pected in any ward of the city, and what the nature of the opposition would be.

All armories, arsenals, fire-engine houses, police stations, prisons, and public buildings should be clearly indicated, and should be visited and thoroughly understood by the commanding officer, his aides, and, in fact, by all other staff-officers.

These maps completed should be hung up at headquarters, and photolithographic copies furnished every officer and non-commissioned officer of the National Guard.

Having completed and distributed these maps, the next step would be to secure similar maps of every large city in the State, and finally a perfectly accurate map of your railroad system. A map of New York or Brooklyn, such as is here described, could easily be prepared in a month's time, working a few hours each day, and would be perfectly invaluable in a professional way.

I can show you in a vacant lot along the line of the Metropolitan Elevated Railroad, in the business part of the city, in which there are upwards of a thousand empty dry-goods boxes, a dangerous auxiliary in the hands of a mob, and one which, were the mob in that quarter, should be seized at once. Those boxes have been where they now are since we first came to New York, two years ago. So I believe it is not an accidental collection.

Your map would show you this and all other facilities of a similar kind. Having your maps, the staff would then discuss every combination or question likely to arise in the event of trouble, and the best plan to adopt in view of it, and you would ask yourselves the following questions:

What co-operation, if any, would be given by the municipal police? how many would be available? and under whose authority would they act if joined with the National Guard or any portion of it?

What is the best way to employ the fire department? and what assistance could they render in entering buildings or in breaking through walls? Do your plans include the street railways and ferries? and if so, what is their rôle, and how far do they understand the part they are to take? What influence will the elevated railroads exercise during a riot? How far can they be best used by the authorities or by the mob? What means or appliance have you for constructing or destroying barricades? and what are the best plans for doing this?

Supposing communication by telegraph and telephone to be impracticable, what points are best adapted to signal stations throughout and between the cities, and what force is necessary to render them secure? Have you a code of signals which could not be read without a key? Given a mob in any ward of any of the cities, what is the best disposition to defeat and capture it? what routes are the least liable to interruption in reaching it? and where would your base of operations be

established? If the mob be operating in several parts of the city simultaneously, which is better, to divide forces or take them in detail with the entire force?

If the mob be composed of men, women, and children, would you open fire or use the bayonet?

What are the specific duties of quartermasters, commissaries, medical officers, and signal-officers of the brigade under the circumstances? Are all provided with the necessary outfit to enable them to act promptly? What details do they require to render them efficient? and what companies and regiments are to furnish them? Has each company its stretcher-bearers? and what provision is made for ammunition and medical attendance?

Is the command prepared to take the field on short notice? and are all provided with camp equipage and messing arrangements?

Should Gatling guns be horsed in a street fight or drawn by men? Is there an engineer-officer on the staff? and if so, has he organized a detachment of pioneers with the tools and means for the kind of work likely to fall to them?

Has each regiment a corps of sharpshooters, who could be used in picking off mob-leaders, or those conspicuously forward or daring? What is the capacity of railway and street cars and ferry-boats, should it be important to move the command in that way?

These are a few of the questions which must be answered *beforehand*, if you wish to act intelligently and promptly, and which cannot be *discussed* when the time for action has arrived.

The duties of execution are indicated by these questions. Every staff-officer should know almost precisely what ought to be done in the event of a riot, we will say, in the Fourth Ward of New York, or in the cities of Albany or Syracuse or Buffalo.

The case should be talked over now, as though it were actually impending. These troubles are certain to happen, and it may be before the summer is gone; and if you wish to establish your superiority over mobs, or riotous assemblages of all kinds, you must make your preparations beforehand.

And now, gentlemen, I will conclude what I fear has not been a very satisfactory paper; such as it is, however, I offer it to you, with the most sincere assurances that I wish it were far better and more comprehensive than it is, and with the further assurance of my appreciation of the honor which has been conferred upon me by the invitation to prepare it. I feel the deepest interest in your progress. I would like to see the National Guard placed on a footing which would make it a terror to all mobs, and which would elevate it to the highest place in public estimation as a school for educating our coming volunteers. I would like to see it thoroughly organized, armed, equipped, instructed, and disciplined. I would like to see the officers and men actuated by

professional motives, and by nothing else; by a desire to excel in all that pertains to their duty, and by an *esprit de corps* which would achieve success in every arm and branch of the service. Upon you of the staff much of this success depends. If you are determined to break down the traditions which have associated the militia with mere training-days, target excursions, and gorgeous exhibitions of gold lace and feathers, you can do so by substituting systematic instruction in armories and camps, and by an occasional public appearance in your service dress, and fully equipped for the field. Do not confine your routes of march exclusively to aristocratic or business streets, but let them extend to neighborhoods which you will probably one day be obliged to visit for a far different purpose. Let all classes see who you are and what you are, and rest assured that they will be in no hurry to commence hostilities.

Finally, do not forget that the militia furnishes the mass of our armies in time of war, and that it is of vital importance to make it thoroughly efficient in time of peace. The impressions which our young soldiers receive in the National Guard should be guarded with the greatest care, lest in the hour of trial they learn too late that what they have always regarded as a mere recreation was designed as a preparation for the most solemn and important duty of an American citizen.

SEA-COAST CANNON AND THE ARTILLERY PROBLEM OF HARBOR DEFENSE.

To assume that there is but one way to do a thing is to put fetters upon human ingenuity. Progress under such circumstances can only be in one direction, and must in time pass the bounds of utility. Unless a fair balance be maintained in any development the favored features will expand into monstrosities, while the less favored, but equally essential features, will sink into insignificance and perhaps be aborted.

That there has been progress in the development of all kinds of fire-arms no one will deny; that the progress has in all cases been well balanced and in the right direction may be fairly questioned. Every fire-arm hitherto devised has had its merits and defects. To increase the one or diminish the other has been, and is, the true province of the inventor. The invention which increases both is a questionable improvement.

The merits and defects of any fire-arm are measured by the degree in which it possesses certain qualities essential to its usefulness. The most important among these are power, precision, portability or manageability, and rapidity of fire. The invention which enhances all these must be an improvement. The invention which enhances only some of them may be a disadvantage. The true measure of value of any invention is its effect upon the usefulness of the thing sought to be improved. Progress may therefore be advantageous or disadvantageous, according as it is general or special.

The development of small-arms affords an illustration of the first kind of progress. There, there has been well-balanced development, a general enhancement of all the desirable qualities of the weapon.

The musket was a machine within the comprehension of every intelligent man. Its merits and defects were apparent. It presented itself to the thinkers of the world as a thing to be improved. Hundreds, perhaps thousands, worked upon it. Inventions positively crowded this path of progress and trod each other underfoot. In the struggle the fittest survived, but only until a fitter appeared. The battle was fierce and general; the changes rapid and radical. From the old flint-lock down through the percussion musket, the Minié rifle, and the Zundnadelgewehr, to the superb breech-loader of to-day, the

march of invention has been so rapid and so startling as almost to rival the vagaries of a dream. Yet every step has been an improvement. Every successful invention challenged the world on the broad field of utility, and held its ground till a more useful appeared. Power was not enhanced at the expense of portability, nor precision to the detriment of rapidity of fire. The advance was regulated by utility, and by that standard every invention was tried.

Turning to the second class of fire-arms, cannon, we shall find, I think, an illustration of the second kind of progress: a case of special development, where some desirable qualities have been enhanced at the expense of others equally desirable.

There has been less contention on this line. The struggle has been more select, the development special, and the progress enormous. Were we to trace the development of cannon from the earliest specimens to the ordnance of the present day, we should find the path ornamented with as many monuments of progress as we found when following the development of the musket. We should find the breech-loader supplanted by the muzzle-loader, once or twice during the development, and ridiculously long guns superseded by ridiculously short ones, in obedience to the special whim of the hour. In short, we should find that the pioneers of progress in this direction were groping in the dark. Recently, however, that is, within the last twenty-five years, the tide of development has set steadily in one direction, namely, the direction of power.

That some of the other desirable qualities of cannon have suffered from this special development will not be denied. Twenty-five years ago sea-coast cannon could be loaded with due deliberation, pointed with care and fired, once a minute. I doubt if the same can be done to cannon of to-day in less than five. Rapidity of fire has unquestionably diminished. Then the guns are much less manageable than they were twenty-five years ago. They have gained, and they have lost. There has been progress. Whether it is advantageous or disadvantageous must be determined by the effect of the changes upon the usefulness of the weapon.

The problem of sea-coast cannon is a hard one to handle, and the difficulties surrounding it have limited its consideration to a few minds. It is a problem which requires something more than common sense to comprehend. Much technical knowledge and large opportunities for experiment are essential to its solution. Few civilians can attempt it, and even among military men, few are so situated as to be able to approach it understandingly. There has consequently been little real competition in this field of invention. In fact, successful competition by any but professional men has been all but impossible. The favored few of the military profession who have enjoyed the essential advantages have had the problem in their own hands so long, that they begin

to think it belongs to them by divine right, or the eternal fitness of things. They guard this assumed prerogative with jealous care, and look with disfavor upon all ideas unofficially begotten. This is not stated as a complaint, but as a fact. It is natural enough. No professional man will willingly submit to lay dictation, or join in consultation with the quack. Least of all can this be expected from a specialist in his own specialty. But while the quack is an intolerable nuisance in most professions, it must be admitted he has done some good work for ours. Gunpowder and the percussion-cap are children of the church; the Gatling gun is the gift of the medical profession; and the arsenals of the world contain the materialization of more illegitimate ideas on the subject of fire-arms than there are honest-born children in the family; and all this in spite of the disadvantages with which civilian inventors have had to contend.

Nevertheless, it is true that few unofficial minds have been directed to the improvement of cannon, and, as has already been said, few official ones have enjoyed the opportunities, without which the solution of the problems involved is an impossibility. The consequence of this has been narrowness. The official mind is necessarily narrow. It is practically one so far as any particular country is concerned. The superior strikes the key-note, and all discordant thoughts among subordinates are hushed for sake of harmony, if not because of discipline. This being the case, the evolution of thought proceeds in the same line. There can be no broadening without antagonism. There can be no true antagonism where one commands and the other must obey. Practically, there has been no real antagonism in this or any other country on the subject of heavy guns. Hence the special development; and while I cannot help admiring the ability, scientific and mechanical, which has carried us so far, I claim the right to question the course we have been steering.

The course chosen seems to have been dictated by a spirit of rivalry between the makers of iron plates and the makers of ordnance. It has been assumed, wittingly or unwittingly, that the only way to destroy an ironclad was to smash or perforate her armor. Consequently the designers of heavy guns have bent all their energies to produce a machine which would accomplish such purposes. In one country, where the key-note of official thought was "punch," rifles of large calibre are the result; in another, where the key-note was "smash," monster smooth-bores; and in all countries the result has been a system of artillery for harbor defense which would bankrupt any nation that attempted to become expert in its use.

Now, if the end reached was a reasonably perfect defense against an ironclad enemy, most of the arguments against the systems and the conditions which produced them would be answered. But this is not the case. That our most powerful guns constitute of themselves a

reasonably perfect defense will hardly be claimed by their most ardent advocates. The speed which has been attained by war steamers renders the chances of hitting them extremely problematical; and the possibility of even unarmored ships running the fire of presumably well-appointed and well-served batteries has been fully demonstrated. If experience teaches anything on this subject, it teaches that obstructions of some kind in all the navigable channels are indispensable elements in harbor defense, and that the best, because the most dangerous and most discriminating obstruction, is the torpedo.

Now, if a harbor can be effectually closed by torpedoes alone, the problem of harbor defense is solved, and the problem of sea-coast cannon becomes superfluous. But again, this is not the case. Human ingenuity is just as powerful in attack as in defense. Torpedoes are formidable, but not unassailable. They may be removed, emasculated, or prematurely exploded. Experiments in England have demonstrated the possibility of clearing a channel of torpedoes, and the dreaded ironclads are not the actors in this part of the drama. It follows that torpedoes to perform their defensive functions must be defended, and for this purpose guns are indispensable.

If my reasoning is sound thus far, the functions of cannon in harbor defense are purely auxiliary. They are not expected to destroy ironclads, other arrangements are depended on for that, but they are expected to defend the torpedoes against such assailants as the enemy may send against them, and their fitness for the work will be the true measure of their usefulness.

Irresponsible parties have asserted that for purposes of sea-coast defense we are practically without an armament, and the same idea prevails, to a greater or less extent, in official circles. They do not mean that we have no guns, but that the guns we have are practically worthless. Now, I am unwilling to admit that. That we possess no cannon capable of destroying a first-class ironclad is the simple truth, but as the destruction of ironclads is not the province of sea-coast cannon, that truth is not a matter to grieve over. Guns are valuable not because they are big, but because they are useful. No sane man would select a 6-pounder to shoot a snipe, or a 12-inch rifle to bombard a small boat. The tool must be adapted to the work it has to do, and before we can determine the character of sea-coast cannon we must ascertain the nature of sea-coast attack.

In case of foreign war we are liable to be visited by ironclad warships practically impregnable to shot. These, if our channels are unobstructed, may enter our harbors any day, in spite of our cannon, and do no end of mischief. And even if our channels are obstructed, if the defense be defective an entrance may be forced.

In this connection it will be well to remember that an enemy need not penetrate to the city he seeks to assail. The moment he gets within

range he is just as dangerous as he ever can be. New York would be practically taken when an enemy enters the lower bay. The channel approach to the lower bay is the military gate of the city, and there alone it can be defended. This has not always been the case. At one time, perhaps, Fort Wood and Fort Columbus afforded fair protection to the city, but the power of cannon has so increased that even Hamilton and Wadsworth, while they might help to close the Narrows against hostile ships, cannot shield the city from hostile shell. That must be defended at the entrance to the lower bay.

Suppose, then, the channel entrance to the lower bay is closed by torpedoes. While they remain the city is safe from an ironclad enemy. To attack the city he must first attack the torpedoes. How would he do this? Would he fish for them from such an expensive outfit as an ironclad? It would be madness to think him such a fool. He would operate in small vessels of light draught—small boats perhaps—and at night or under cover of a fog. He would advance, not along the channel, but alongside it. He would cut the wires which connect us with our system of submarine mines, and then scrape the channel clear of torpedoes. This undoubtedly would be a hazardous undertaking,—war, when it is waged in earnest, is always hazardous,—but would it be much more so than running regular approaches on land against a well-armed and well-garrisoned permanent work? The torpedo fishers, small, swift, erratic, and numerous, a perfect nest of naval hornets, are the advance skirmishers of the hostile fleet, and they are the fighting part of it as well. If they fish well they fight well. Their safety lies in their insignificance. Their work done, the ironclads advance, not to attack the forts, but to attack the city. They can run the batteries or disregard them, as dictated by the condition of their sides. In no case would they fight them. That would be a waste of time. They would pass the batteries, trusting for safety to their armor and their speed, and then the city would be at the mercy of their guns.

Now, if that be a reasonable plan of attack, the question arises, How can it best be met? How can the hazard of such an undertaking be increased? The answer to these questions will solve the artillery problem of harbor defense.

Public opinion is not the proper authority on such subjects, but in a government like ours it is powerful, and little can be done without its aid. On this subject, however, it has been aroused, and if we desire its aid now is the time. Congress has been memorialized in regard to harbor defense, and, guided no doubt by what it considers competent authority, responds with an appropriation for a few new guns. The people and the legislature seem to be at one as to the solution of this problem. In their estimation it is simply a question of cannon. They recognize the fact that we have fallen behind the world in the matter of guns, and must catch up, or be prepared to take a back seat. To

avoid the alternative they vote more powerful guns, and feel, no doubt, that the problem is in a fair way of solution. Now, I hold it to be our duty to say to them, and to the people, that guns will never solve the problem. Would half a dozen 12-inch rifles at Sandy Hook make New York more secure? Mark me, I do not object to the new guns. They will be a valuable addition to our armament. They will increase our aggressive power, but they will not solve the problem of harbor defense. To be sure, a shot from such a gun would, under favorable circumstances, pierce the armor of many, but by no means of all the ironclads afloat. But the question is not so much of piercing as of hitting. It hurts less to be missed by a 12-inch shot than to be hit by a 12-pounder.

The artillery problem of harbor defense must be considered in the light of its auxiliary character, and in connection with the probable nature of harbor attack. If the attack *must* be in small vessels, or small boats specially fitted for the purpose, guns of enormous power will not be needed. Such vessels would be much harder to hit than to destroy. We need precision and rapidity of fire rather than enormous power in our guns to make us formidable, and we need expert gunners more than anything else to make us dangerous. We need practice. Not spasmodic firing from selected guns in sequestered swamps or unfrequented water-ways, but constant practice in the channels we shall have to defend and with the guns we shall have to use in case of war. We must become artillerists in something more than name. Uniform will never make a man an artillerist. Familiarity with the science of gunnery will never make him a gunner. To be handy with a gun, or a boomerang, or a buzz-saw for that matter, requires constant practice. We need practice more than guns. We need an annual appropriation for that purpose; and the practice should not be experimental firing on the proving-grounds, but practice from the batteries. For this purpose the channel entrances to our harbors should be in the hands of the artillery at least one hour a day. Commerce should be required to stand aside to that extent. The national safety is, or ought to be, the first consideration of government, and if artillery practice is essential thereto, then we must have practice. Government must provide the means and commerce must yield the opportunity. One gun detachment, properly trained, would be worth more for defense in the harbor of New York than a whole regiment of untrained artillery.

There is one thought which arises in connection with this problem of harbor defense which deserves especial consideration. It is this, "we cannot afford to wait for a new armament." It is only the assailant who can bide his time. A man when attacked must defend himself with such weapons as he happens to have at the time or surrender: there is no middle course; and it is just so with a nation. Of course, this is no argument against new guns. It is not advanced as

such. It is intended to show the necessity for preparedness to defend ourselves with the guns we already possess. We should be able, at the shortest notice, to use them for all that they are worth in defense. If we have fallen short of this in any degree, by just so much we have fallen short of our duty to the nation.

Every gun that can shoot across a channel could be utilized, and should be utilized, in defense, until it is replaced by a better. We have abundance of guns. They are not, perhaps, exactly what we would like them to be. We may intend to replace them by and by by better ones. But we must wear the old coat until we get a new one, and it takes constant care to get all the possibilities out of an old coat. So with our old armament. How to utilize it to best advantage for defense is, or ought to be, the question for the artillery.

The problem of harbor defense has changed within the last twenty years. In fact, it is changing now, and doubtless will continue to change as long as human ingenuity continues active. The assailant has the initiative, and can control the game. A century ago a gun ashore was more than a match for a gun afloat. I believe some artillery enthusiast claimed that it was equal to a frigate. But that was before the days of steam. When steamships appeared, harbor defenders found that the chances had turned against them. They could no longer depend upon an equal number of guns. The increased speed and manageability of their assailants, and their independence of wind and tide, immensely increased the difficulty of hitting them. To restore the ratio of chances to something like what it was in the days of sailing-ships, they had to multiply their guns. Then arose those grand old sea-coast castles, like Sumter and Wadsworth, bristling with cannon, tier upon tier, and steam was thought to be checkmated. But the adversary clothed himself in iron armor, and laughed at the new device. Then began the race between iron plates and ordnance, of which I have already spoken, the impelling force being the idea that it was necessary to punch or smash the armor to demolish the ship. That idea still prevails. Many of the sea-coast castles have been razeed, provided with an earthen overcoat, and pierced for few but heavy guns, with the evident intention of continuing the game. Should this scheme be carried to completion, it will require no ironclad to enter any of our harbors.

The problem of harbor defense cannot be solved by cannon, let their calibre be what it may. The 12-inch rifle will be, in my opinion, less effective for defense than a much smaller gun. Such a gun cannot be loaded and pointed at a moving object with any degree of accuracy in less time than five minutes. Now, supposing the embrasure permitted such a gun to traverse through an arc of one hundred and twenty degrees, a war-ship five hundred yards from the battery, and going only twelve knots an hour, could cross the field of fire in less time than

it takes to load. The distance to be sailed would be about seventeen hundred and thirty-two yards. The ship moves one knot, that is, two thousand and twenty-eight yards, in five minutes. The gunner has but one chance at the ship. Let some artillery actuary calculate the probabilities of hitting. To be sure, there would be more guns than one, and every additional gun would increase the chances, but Farragut's wooden flag-ship proves that there is a strong probability that the vessel would escape.

To give some idea of the difficulties of hitting under the circumstances supposed, let us consider for a moment some of the elements of inaccuracy which enter into the problem. Accuracy of aim depends upon the correctness with which the gun is given direction and elevation. The ship is moving four hundred and seven yards per minute, and the range decreases from one thousand to five hundred yards in two minutes and a half, and then increases again to one thousand yards in the same length of time. To strike her in the most vulnerable part is the object of the gunner. To do this he must direct his gun twenty feet in advance of that point, and give it an elevation corresponding to the true range at the instant of firing. If he miscalculates the distance fifty yards, or is delayed five seconds in delivering his fire, he misses the mark. Can we expect such artillery instinct in a moment of excitement from any mortal man? We look with admiration upon the man who by years of constant practice has acquired the skill to kill a bird upon the wing with a single bullet, and yet we have nothing but contempt for the unpracticed artillerist who fails to perform an equally difficult feat.

But a new element has entered the problem. The torpedo has been invented and improved into a formidable obstruction. It claims to be able to close our water-ways against the most powerful ironclad if protected in its hidden lair, and few dispute the claim. Yet it has been treated like an illegitimate child by those who profess to do the scientific thinking for the artillery. Another corps has been its foster-father. It has thriven under such tutelage, and now proposes to set up for itself as an independent element in harbor defense, not only the equal but the superior of its antiquated auxiliary. So the "punchers" and the "smashers," who have soared to giddy heights in the atmosphere of theory after the ironclad goose, must now come down, confess discomfiture, and, with their hats in hand, say to their base-born rival, "Master Torpedo, what can we do for you?" Humiliating as such a position is, it is the position of the artillery in the problem of harbor defense to-day. How much better it would have been to have brought the brat up in the family!

But the situation is as we have stated it, and duty demands that we accept it, and make the best of it. If the torpedo has forsworn allegiance to its rightful governors, it cannot escape their guardianship.

If its disposition and manipulation have been intrusted to other hands, its defense remains in ours. We will have to bear that burden in the hour of trial, and all we ask is opportunity to become acquainted with the load. We are no longer the direct guardians of our sea-coast cities, but we are the guardians of their torpedo defenses, and we ought to know all about them. Dividing the problem of defense, and permitting each party to work on it in secret, is a poor way to produce harmony or results. We ask to be heard on the subject of harbor defense. As it is, we have no voice in the matter.

The absurdity of dividing the problem of defense needs no argument. One party devises the guns, another the place to put them, and the third waits for war to get a chance to fire them off. How this condition of things came about is matter of history. At one time the engineers and artillery constituted one corps. Then there was no question as to whom the problem of harbor defense should be referred. But there were other duties to do, and infantry was scarce, and so artillery troops had to be used, and while they were away the partnership with the engineers was dissolved, and there was an unfair division of the franchises. In this way the artillery lost its vote on the question of harbor defense. Then, because infantry duty was considered incompatible with artillery science, a new corps was created to look after that branch of the business, and there was but little left to distinguish the emasculated corps from the infantry but the uniform and the name. A special corps provides it with guns, and another without consultation determines where to put them. The artillery, however, is still permitted to trim the grassy slopes of our sea-coast forts and feast its eyes upon their formidable armaments, and so qualify itself for efficient service in the day of danger.

This is certainly a very singular condition of things. In no other army in the world is the artillery so systematically ignored as in ours. In the British army the co-operation of the artillery and engineers is enjoined by the Regulations. Article 50, Section 5, prescribes that "the commanding officers of artillery and engineers are conjointly responsible for the artillery and engineer arrangements appertaining to the defense and attack of fortified places." The same article goes on to say that "the intimate connection that exists between the artillery and engineers branches of the service renders necessary the most cordial co-operation on the part of the officers in command." Again, in Article 51 we find "it will be the duty of the engineer officer to design the batteries to meet, as far as circumstances will admit, the requirements of the artilleryman."

Such language sounds strange to artillery ears on this side of the Atlantic, but it correctly describes the relations which should exist between the two corps. National safety and common sense alike demand the re-establishment of such relations in our army. No corps can

co-operate intelligently with another and be excluded from its councils, and no single corps is wise enough to do the thinking for two. Masonry alone will never keep an enemy out. Millions of dollars' worth of dressed stone, laid up in courses of ever so graceful solidity, are in themselves no defense. Our most elaborate works are only shelters for the artilleryman and his machines. The real defense is the artilleryman and his gun, and of the two the man is the more important. He has a vital interest in the problem of harbor defense, and the system which deprives him of a voice in its solution is not only unjust but absurd.

The problem of harbor defense is of vital importance to any nation having a sea-coast to defend, and this is especially so where the national navy is not a match for the possible foe. In our country the harbors are our most vulnerable point. In ten days from the declaration of war by a foreign enemy we may be called upon to defend them. Of what avail would then be all our incompleted plans? The problem is not a prospective but a present one. It should be solved now, and with reference only to means of defense actually on hand. We have cannon, and I suppose torpedoes. How to plant them, such as they are, to best advantage for defense is the problem to be solved, and no single corps can solve it. To be harmonious and efficient in the drama of defense the actors must rehearse together. Who are the actors? They are the torpedo corps, the artillery, and the engineers. To them the problem should be referred, and they should be held conjointly responsible for the solution.

It is painful to see so many unfinished works at the entrances of our harbors. It is painful to see so many obsolete ones, propped up and garnished, on inner lines of defense. They deceive nobody but ourselves. They are worthless. Their armaments, if distributed among earth-works at the points to be defended, would be valuable. In their present position they are simply buried. We are altogether too prodigal of cannon. We seem to lose all respect for a gun the moment we learn there is a better one in existence, and cast it aside like a broken toy. It is disgraceful to see so many stragglers from the last cast-iron column of smooth-bores ungathered in. They should all be either mounted or in position to be mounted in the shortest possible time. It will not do for professional men to keep silence on this subject till trouble comes, and then throw the blame of unpreparedness on the legislature. Until we have utilized every available means of defense for all that it is worth the responsibility is ours, and it should not be a divided responsibility. The corps intrusted with the defense should be conjointly responsible. There should be no possibility of crimination and recrimination in the hour of danger. The drama of defense should be thoroughly understood by all the actors before the play begins, and each should be afforded opportunity to perfect himself in his part. Of what avail would perfect works and powerful cannon be without expert

gunners? The gunner is unquestionably the very soul of the defense, and he is not a natural production. There are no born gunners. Gunnery is an art as well as a science, and a very difficult one to learn.

It is a gratifying fact that the army has been aroused on the subject of infantry marksmanship, and that under a system of persistent practice it has improved in efficiency at least a hundred per cent. Now, there is such a thing as artillery marksmanship, and it is harder to learn and of greater importance than the infantry kind. The infantryman has the theory of chances on his side. The rapidity of fire of his weapon enables him to throw twenty bullets in a given direction where a soldier of Wellington's line could only throw one, and Wellington's line was impregnable to assault. The infantryman is formidable without marksmanship. Not so the artilleryman. If he misses his first shot he cannot calculate upon a second. The rapidity of fire of his weapon has been diminished. He cannot blaze away now as he could twenty years ago, and trust to the theory of chances for a hit. If he is not a marksman he is worthless.

The problem of harbor defense has been too long in the hands of specialists. Granting that they have done good work in their several departments, the result is not satisfactory. The problem is not solved. Unless the machines and shelters which their skill has devised, and which they have constructed at immense expense, be intelligently and efficiently handled when the hostile attack comes, the money expended on them will have been worse than wasted. The artilleryman demands recognition as an important actor in the drama of defense. He wants to be heard on the subject of the machinery and appliances of the play. He demands admission to rehearsal, and ample opportunity to practice his part. If he be denied these, then he repudiates in advance all responsibility for the inevitable failure of the performance.

JAMES CHESTER,
First Lieut. Third Artillery, Brev. Capt. U.S.A.

FORT WADSWORTH, N. Y. HARBOR,
April 10, 1880.

EDITORIAL NOTES.

It is too soon yet to make any reasonable prediction as to the influence which the new Liberal government of Great Britain will exert upon the international affairs of Europe. The new cabinet is moderate rather than extreme in its political tendencies, so that no radical change in foreign policy need be looked for. It is true that Mr. Gladstone and the Earl of Beaconsfield are diametrically opposed in their views of Turkish and Indian affairs (the two questions which are now paramount in British policy), but there are political traditions and questions of "expediency" involved which even Mr. Gladstone must respect, so that he will not dare to adopt a radically different course from that of his predecessor in office, as many hope and predict.

The subject of next importance in European politics is the possibility of a confederation of the Balkan states,—Servia, Bosnia, Roumania, Roumelia, Bulgaria, and Montenegro,—the federal government which they would thus form to be the political heir of the Ottoman empire in Europe. It is known that Mr. Gladstone and his cabinet are in favor of this project, which also meets with much favor from other eminent statesmen in Europe. This scheme is possible of fulfillment, but we do not think that it is probable. If the distinct ambitions and conflicting interests of the several states be not sufficient to prevent such a union, the machinations of Russia and Austria—which would like to "absorb" these states, and which would not like to see another powerful nation grow up on their borders—would tend to prevent it.

We notice the report that the sending of German and Austrian military deputations to congratulate the czar on his last birthday has given birth to the rumor that it was the occasion of a renewal of the alliance between the three emperors, merely to observe in connection therewith how idle such rumors always are, and how surprising it is that intelligent men can be influenced by them. Even if it were true, what would it amount to? Nothing! If the three emperors find it to their interest to act in concert, they will do it without any prearranged alliance; if they find it to their interest to act in opposition to one another, all the alliances they ever made will not deter them from doing so. Kings, like corporations, have no souls when questions of state policy are to be decided.

Italy is daily becoming more restless, and the early overthrow of the present ministry may be expected, in which event a more aggressive foreign policy will be adopted.

China is still making preparations for war, and with the Russians and Kuldjese on one side and the Portuguese in Macao on the other, she may soon get all she wants.

Afghanistan is not yet subdued, and it is difficult to say when it will be. During the past months Generals Ross and Stewart have had several serious fights with the hill tribes, which are sufficiently strong in numbers to keep up a formidable resistance to the British.

THE South American republics seem to be as far as ever from the resumption of peaceful relations. At last accounts, Campero, the president of Bolivia, was *en route* for Tacua with three thousand men, which, with the forces at Arica, will place the strength of the allies at about twenty-one thousand. The Chilians were advancing their lines in the direction of Tacua, their outposts being about thirty-nine miles distant. A portion of the Chilian fleet has just arrived off Callao, and signalized its advent by an attempt to blow up the Peruvian corvette "Union," at the same time, by the awkward handling of the torpedo-launch, seriously endangering the U. S. steamer "Alaska" and the Italian frigate "Garibaldi." This attempt proving unsuccessful, the Chilian admiral proceeded to formally announce the blockading of Callao and the adjacent bays and ports.

IN most sections of the Indian country peace at present exists, the principal exception being our Southwestern border, where the war against the renegade Apaches, who have so long harried that region with unprovoked murders and thefts, is being vigorously prosecuted by General Hatch, ably seconded by General Grierson and Major Morrow. Fresh complications threaten with respect to the Utes, in consequence of the influx upon their reservation of miners and prospectors. Ouray, who represents that good progress is being made towards bringing the Indians to the acceptance of the terms of settlement recently arranged at Washington, is calling upon the government for troops to protect the Indians from white trespassers; and, meanwhile, the delay of Congress to act definitely upon the proposed settlement is causing irritation all around.

IN calling attention to the article on "The Duties of Staff-Officers," in this number of THE UNITED SERVICE, we desire to make a note in

connection therewith of special interest to general officers of the militia, and of supreme importance not alone to the militia as a body, but to the country at large. The article referred to is one of a series on professional subjects which have been read by distinguished militia and regular army officers before the officers of the Eleventh (Brooklyn) Brigade, N.G.S.N.Y. In addition to obtaining this series of articles for the instruction of his officers, Brigadier-General E. L. Molineux, commanding, has introduced such new measures of organization, discipline, and drill as to make the Eleventh the model militia brigade of the United States. Among these measures may be noticed the division of the city into military districts, and the inspection of the principal streets and the buildings thereon to obtain a knowledge of their character for offensive and defensive purpose in case of riot or invasion; the organization of a signal corps (the first of the kind in the country), and the selection of stations in different parts of the city, between which signals may be (and have been) exchanged by flag or torch, either day or night; the keeping of a record of the general qualities of every man in the brigade, so that if a special corps—such as sharpshooters, sappers and miners, etc.—be required at any time, the men who are best qualified for the duty can be detailed for it immediately; the ordering of an occasional field-day at a place in the country kept secret from all but the staff up to the moment of departure, and of an occasional brigade drill in the streets of the city at night, when it will not interfere with the men's daily occupations; and the special instruction of the staff-officers in their important, but too frequently unknown duties. Such are the principal means by which this brigade has obtained its right to be considered the best-disciplined and most effective one in the country. We refer to it here now merely to show the officers of other brigades throughout the country what can be done in the way of militia reform, —what must be done if they would redeem their organizations from the greater or less discredit with which they are now popularly regarded. Will they profit by the example?

THE loss of the British training-ship "Atalanta" (that she is lost there can now be no doubt) is but another added to the long list of vessels which have left port never to be seen or heard of again. While her fate, like that of all similar cases, is purely a matter of conjecture, it is probable that she went down off the Azores in the terrific storm that crossed the Atlantic in the vicinity of those islands about the middle of February. She left Bermuda, homeward bound, January 29, and would, it is believed, have been in the vicinity of the Azores just at the time that the storm was passing there. She had thirteen officers and a crew of about three hundred boys and young men.

SERVICE LITERATURE.

MESSRS. D. APPLETON & Co. announce as nearly ready for the press a new edition of the "Memoirs of Napoleon: His Court and Family," by the Duchesse d'Abrantès (Madame Junot). Those who are familiar with this work will remember that it presents Napoleon in a light much more agreeable to his admirers than do the recently published memoirs of Madame de Rémusat.

APROPOS of Napoleonic literature, a new book on Napoleon I., based on hitherto unpublished documents in the archives of the French Ministry of War, entitled "Bonaparte et son Temps," is now being published in Paris. The first two volumes comprise the period from 1769 to 1794. The author, M. Jung, says that Napoleon's father, Charles de Bonaparte, was one of the first to join the French when they conquered Corsica in 1769, and the French governor of the island, M. de Marbœuf, promised him a free education for his son at the military school at Brienne. Before going to the school, however, Napoleon had to learn French for three months at Autun. On leaving the school he passed an examination which was far from brilliant, and his tutors described him as "taciturn, capricious, haughty, and extremely egotistical and aspiring." He served as lieutenant in various garrisoned towns. He was at this time an enthusiastic Corsican patriot, and freely expressed his detestation of the French conquerors of his country. While at Douai he attempted in a fit of melancholy to commit suicide. After the fall of the Bastile he became a violent Jacobin, and was promoted by the younger Robespierre, with whom he was in great favor, to the rank of general officer. The commissary-general, M. de Sucy, about this time observed of him that he would end his career "either on the throne or the scaffold."

"RADICAL-MECHANICS OF ANIMAL LOCOMOTION; WITH REMARKS ON THE SETTING-UP OF SOLDIERS, HORSE AND FOOT, AND ON THE SUPPLING OF CAVALRY HORSES," is the title of a book just issued from the press of D. Van Nostrand, the author of which is William Pratt Wainwright, formerly colonel commanding the Seventy-Sixth New York Infantry Volunteers.

HELEN STANLEY writes from Paris to the *American Bookseller* that the novel entitled "Le Mariage de Loti," which obtained such success in *La Nouvelle Revue*, and which has just been published in book-form, is the work of a clever young officer in the French navy, whose voyages have led him to Tahiti, the strange country whose habits and landscapes he so admirably describes while telling the story of the love-drama the scene of which is laid amid its tropical luxuriance and natural beauty.

WE have in hand and shall soon publish an interesting paper on "The Sign-Language of the North American Indians," by Lieutenant William P. Clark, Second Cavalry, U.S.A., in which the writer expresses dissent from some of the views embodied in the article on the same subject recently published in THE UNITED SERVICE from the pen of Brevet Lieutenant-Colonel Garrick Mallery, U.S.A.

L. R. HAMERSLY & Co. are progressing rapidly in the preparation of their "Naval Encyclopædia," towards which many of the most eminent specialists in naval science are assisting as contributors of articles. The editorial work is being done by Mr. Lewis R. Hamersly, Medical Director Edward Shippen, U.S.N., Lieutenant J. W. Carlin, U.S.N., and Colonel George A. Woodward, U.S.A. The same firm have also arranged with Brevet Major Thomas Wilhelm, U.S.A., to publish his very valuable "Military Encyclopædia," which he has just brought to completion after several years of arduous labor. The publication of these two works will supply a want that has been long and keenly felt by both services.

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Mr. McLaine

THE UNITED SERVICE

A MONTHLY REVIEW OF

MILITARY AND NAVAL AFFAIRS.

VOL. II.—JUNE, 1880.—NO. 6.

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L. R. HAMERSLY & Co., Publishers, 1510 Chestnut Street, Philadelphia, will issue, about September 1, the NAVAL ENCYCLOPÆDIA, which they have now in active preparation. Among the contributors of special articles to this important work will be the following:

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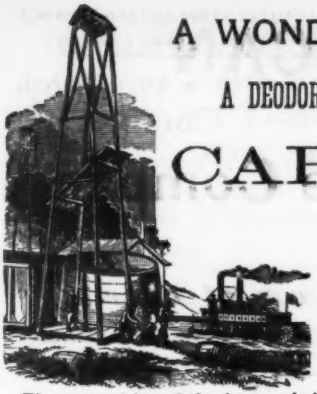

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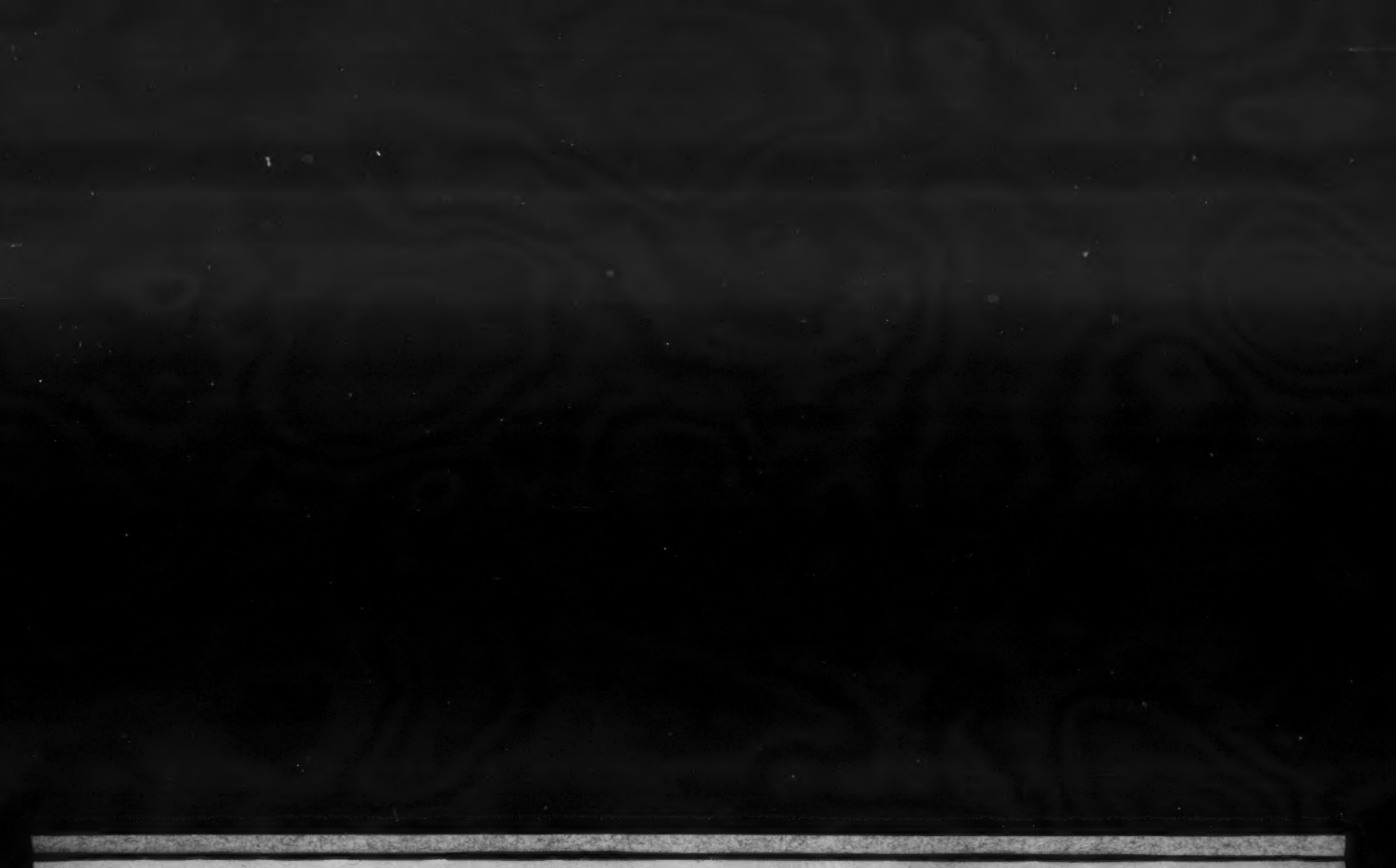
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